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Effect of enterprise risk management on fraud occurrence in independent regulatory agencies in Kenya.

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EFFECT OF ENTERPRISE RISK MANAGEMENT ON FRAUD OCCURRENCE IN INDEPENDENT REGULATORY AGENCIES IN KENYA

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

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ABSTRACT

Despite the efforts made to ensure the public sector in Kenya implements Enterprise Risk Management and realizes the related benefits, the sector still faces the challenge of poor and declining performance, which inhibits the realization of sustainable economic growth. The purpose of the study was to establish the effect of enterprise risk management on fraud occurrence in independent regulatory agencies in Kenya. The objectives of this study were to determine the effect of the risk management process on fraud occurrence; the effect of risk governance on fraud occurrence; the effect of risk aggregation on fraud occurrence and determine the moderating effect of the Mwongozo code of governance on the relationship between enterprise risk management practices and fraud occurrence. The study was anchored on Agency theory, Stakeholder theory, and the Fraud Triangle theory. It used an explanatory research design and the target population comprised twenty-five independent regulatory agencies in Kenya. Primary data was collected using a semi-structured questionnaire administered to the employees through drop and pick method. The data were analyzed through descriptive statistics using the Statistical Package for Social Science (SPSS version 24.0) and presented through percentages, frequencies, mean and standard deviation. Additionally, the study used logistic regression analysis to analyze the relationship between the study variables. From the results, the study concludes that the risk management process has a negative and significant effect on incidents of corruption in independent regulatory agencies in Kenya; risk aggregation has a negative and significant effect on misstatement of financial statements; Further, Mwongozo Code of governance does influence the relationship between enterprise risk management and misstatement of financial statements.

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ABBREVIATIONS AND ACRONYMS

BRC	Board Risk Committee
CAPM	Capital Asset Price Model
COSO	Committee of Sponsoring Organizations of the Trade way Commission
CRO	Chief Risk Officer
ERM	Enterprise risk management.
ISO	International Organization of Standards
IRMPF	Institutional Risk Management Policy Framework
OECD	Organization for Economic Co-operation and Development
RMP	Risk Management Practices
SCAC	State Corporations Advisory Council
MFS	Misstatement of financial statements
AM	Asset misappropriation

DEFINITION OF TERMS

Enterprise Risk Management: A process that is effected by an entity's board of directors, management, and other personnel, applied in strategy-setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives. Unlike traditional risk management where individual risk categories are separately managed in risk ‘silos’, ERM enables firms to manage a wide array of risks in an integrated, enterprise-wide fashion (COSO, 2017; Hoyt & Liebenberg, 2011).

Fraud occurrence: This refers to the deliberate misrepresentation of the truth with the intention of deceiving a particular entity or person for unfair wrongful gain at their own expense (Kingsley 2015).

Risk Aggregation: The process of consolidating risk exposures from the bottom level (e.g. individual risks, contracts, lines of business, business units, subsidiaries) of a business hierarchy to a risk profile at the top level (e.g. corporate group), (Chong, Feng & Jin, 2021).

Risk Governance: An activity carried out by an organization's board of directors and management to regulate risks and build internal control systems for the identification, measurement, and management of risk (Cavezzali & Gardenal, 2015).

Risk Management Risk management is the identification, assessment, and prioritization of risks, (defined in ISO 31000 as the effect of uncertainty on objectives) followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities. Risk management’s objective is to assure uncertainty does not deviate the endeavor from the business goals

Risk Is the effect of uncertainty on objectives. The effect can be either positive or negative. Uncertainty is a potential, unpredictable, un-measurable, and uncontrollable outcome, risk is a consequence of action taken despite uncertainty. Negative risks also referred to as threats should be managed while positive risks also referred to as opportunities, should be explored (ISO 31000).

Mwongozo Code: A policy document that seeks to incorporate the principles of corporate governance in the management and governance of State Corporations in Kenya (Githiri, 2020)

DEDICATION

The research is dedicated to my family. Thank you for your support.

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CHAPTER ONE

1 INTRODUCTION

1.1 Background of the Study

Fraudulent behavior of firms damages the firm's image and the regulatory industry in general because of sending misleading information, generating negative consequences for stakeholders, and distorting the efficient allocation of economic resources (Kinyua, 2015). In particular, in a developing economy such as Kenya, the undeveloped corporate regulatory system, gives rise to a stronger incentive for corporate opportunistic behavior than in developed countries (Njenga and Osiemo, 2013). Therefore, although numerous studies in the literature have examined corporate fraud (Rubasundram, 2015; Hirshleifer, 2017), corporate fraud in Kenya has become a key area of research topic recently (Baker, Purda, and Saadi, 2020).

Acts of fraud have resulted in the collapse of many high-profile companies such as Enron (U.S.A.), WorldCom (U.S.A.), Parmalat (Italy), Royal Ahold (Netherlands), Vivendi (France), SK Global (Korea), Satyam (India), Volkswagen (Germany) exemplifying that fraud occurrence is an international phenomenon (Mwangi & Ndegwa, 2020; Tarjo, et al, 2022). In Kenya, the fraud menace led to the collapse of companies listed on the Nairobi Stock Exchange (NSE) such as Imperial Bank, Uchumi Supermarket, Nakumatt Holdings, Kenya Airways, and Mumias Sugar Company (Mpiana, 2017). A key factor leading to the thriving of fraud is the lack of sufficient or weak anti-fraud control systems (ACFE, 2018; Deloitte, 2018).

It is known that business organizations find their fundamental purpose through value creation for stakeholders, usually represented by their customers, shareowners, employees, shareholders, and suppliers as well as by the social impact they produce (Krause and Tse, 2016). A common aspect of the organizations is that in their strategic and operational decisions, they face uncertainty. ERM covers various risk types that organizations face (Karaca and Senol, 2017). Beals. et.al., (2015) explained that ERM facilitates the awareness of risk factors which helps management in making decisions. The focus of ERM is the deployment of a risk management process for the business, enabling the adoption of best practices with the stakeholder's support.

Because of the vital role, it plays in strengthening an individual firm's capacity to not only manage risks but also seize opportunities related to its goals and objectives, Enterprise Risk Management (ERM) has become important to most business organizations in contemporary society (Muslih, 2019). Organizations are now able to manage risks and grasp opportunities in the current market environment by implementing ERM. Enterprise risk management (ERM) has become an interesting area of focus for many business organizations, according to MD Sum and Khalik (2020), especially in today's society, where there are more global market uncertainties and intense market competition. Due to the heightened level of uncertainty in contemporary local as well as global economies, every business organization is implementing risk management strategies, though to varying degrees (Muslih, 2019).

Financial irregularity, according to Kingsley (2015), is a critical global concern and a major problem in developing countries, an endemic that has become a way of life. Reliable risk management capability is one of the core competencies that management must possess to create value within an organization. One of the efforts that can be made to minimize the occurrence of fraud is by implementing Enterprise Risk Management (ERM). The goal of this research was to look into the effects of Enterprise Risk Management (ERM) on fraud occurrence in Kenya, with an emphasis on independent regulatory agencies. This research looked into the risk management process, risk governance, and risk aggregation to determine their effect on fraud occurrence. The study also sought to establish the moderating effect of the Mwongozo Code of Governance, on the relationship between enterprise risk management and fraud occurrence in independent regulatory agencies in Kenya.

1.1.1 Fraud Occurrence

The Association of Certified Fraud Examiners (ACFE) defines fraud as any illegal act characterized by deception, concealment, or breach of trust that is performed with the intent of gaining an unfair or unlawful gain. Fraud is the intentional misrepresentation of facts with the intent of deceiving a specific entity or person to gain an unfair, unjust gain at their own expense (Kingsley, 2015). Corporate fraud is defined by Indian auditing standards as an intentional act involving the use of deception to gain an unjust or illegal advantage by one or more individuals among management, those responsible for governance, employees, or third parties (Desai, 2020). Similarly, the US standards describe fraud as an intentional act that results in a material misstatement in financial statements that are the subject of an audit, according to the AICPA (2002).

The Association of Certified Fraud Examiners (ACFE) defines occupational fraud as fraud committed by individuals against the organizations that employ them. It further highlights the different types of occupational fraud which mainly include financial corruption, wealth abuse, and fraud in financial statements (ACFE, 2012). Wealth abuse, often known as embezzlement, is a type of employee fraud that involves the theft or misappropriation of an organization's assets or funds by falsifying or misrepresenting records or documentation. Financial corruption is a type of fraud in which employees of a unit abuse their positions of power to obtain direct or indirect benefits. Financial statement fraud pertains to inaccuracies in presentation, the omission of items, and the failure to disclose sufficient information with the intent of manipulating financial statement users, particularly investors and creditors. This is usually accompanied by an overestimation of assets and revenues, as well as an underestimation of liabilities and expenses, and vice versa.

According to the ACFE's Report to the Nations (2020), which examined 2,504 examples of occupational fraud in 125 countries, the average fraud lasted 14 months before being discovered and resulted in a monthly loss of $8,300. Findings from the report indicated that asset misappropriation occurs in the vast majority of fraud schemes at 86% of cases; however, these schemes were reported to cause the lowest median loss at USD 100,000 per case. In contrast, financial statement fraud schemes were reported to be the least common at 10% of schemes but resulted in the greatest losses at 954,000 per case. The third category, Corruption falls in the middle in terms of both frequency and financial damage. These schemes were reported to occur in 43% of cases and cause a median loss of USD 200,000.

There have been several studies previously done on fraud that have produced conflicting results indicating that there was a need for more research in this area. Lee and Walker

(2007), noted inconclusive results when examining internal auditors' prior success in fraud detection and no fraud occurrence. Law (2011) noted that receipt of an unqualified audit opinion and choice of the auditor had no significant relationship with preventing fraud occurrence. On the contrary, Ocansey & Gani (2017), in their research on the role of corporate culture in managing occupational fraud, contended that corporate culture plays a key role in integrating the right behavior in the organization and preventing fraud.

1.1.2 Enterprise Risk Management

COSO (2017) defines Enterprise Risk Management (ERM) as a process designed to identify events that could affect the firm and to manage these risks to keep them within the firm's risk appetite, thus providing reasonable assurance that its objectives are met. Enterprise Risk Management (ERM) is also defined by Fragouli, Hutcheon, & Faryna (2018), as a process effected by an entity's board of directors, management, and other personnel, applied in strategy-setting and across the enterprise, designed to identify potential events that may affect the entity, manage risk to be within its risk appetite, and provide reasonable assurance regarding the achievement of the entity's objectives. ERM has an underlying principle that strives to improve an organization's ability to effectively achieve its objectives by managing risks holistically and seizing opportunities.

In the past, companies have been using the "Traditional Risk Management' concept to manage risk where risks are managed in a silo manner. Finance and accounts were charged with the responsibility of managing credit and the Human Resource department with the responsibility of people management, risks were not managed in a coordinated manner (Njagi 2017). This traditional risk management approach was generally defensive as it concentrated on the protection of the firm against adverse financial scenarios (Gatzert and Martin, 2013). This approach is also limited in scope and application as noted by Wu *et al*., (2016). The "Traditional Risk Management" concept appears to be lacking in terms of total integration due to the silo approach (Przetacznik, 2018). As a result of these shortcomings, the gradual change from traditional risk management to an all-encompassing risk management concept.

In ERM the focus is shifted towards more offensive handling through the integration of ERM into the corporate strategy and the decision process and is explicitly intended to contribute to increasing shareholder value (Meulbroek 2002; Liebenberg & Hoyt, 2003). ERM thus does not only attempt to minimize risk but explicitly accounts for potential opportunities. Kallenberg (2009), while trying to compare ERM and traditional risk management practices, noted that ERM is more holistic and stresses all the risks that an organization may be facing. It promotes a 'portfolio approach to risk management, it provides a structure that links various risks together, it promotes risk management that does not merely focus on the sum of various risk elements and it should also consider risk interactions. A successful ERM function should incorporate financial, business, reputational, political, strategic, and other risks (Kallenberg, 2009).

Studies on fraud (Mwangi & Ndegwa 2020; Rehman & Hashim, 2020; Elsayed 2017; Kingori et al., 2019; Kiprono & Ng'ang'a, 2018) have mainly centered on fraud risk management, as noted by Butterfield, (2017), fraud risk management is a form of traditional risk management where fraud risks are segmented. Enterprise risk management on the other hand is a holistic view of risks that the organization is exposed to (COSO, 2004). Systematic enterprise risk management model is therefore the need of the hour, to help organizations curb the risk of fraud.

Despite the growing importance of holistic risk management systems, ERM has only been adopted by some companies and not others (MD Sum and Khalik, 2020). As a result, there arises a question as to why some companies are implementing the ERM framework while others are ignoring it. There is also a question of to what extent and in which way an ERM system impacts a firm's performance, and whether it contributes to the increase in the value of the firm (Brown, 2012). In this context, the purpose of this research was to look at the effects of enterprise risk management on fraud occurrences in independent regulatory agencies in Kenya. The effect of the risk management process, risk governance, and risk aggregation on fraud occurrence was investigated.

The risk management process is a set of procedures that a company should consider to evaluate and minimize the risks that it faces. Risk management and risk mitigation are ongoing processes of resiliency, not a project (MD Sum and Khalik, 2020). The following are components of the risk management process: The identification of risks is the first and most important phase in the risk management process. Its goal is to identify hazards as early as possible, both within and outside the entity; Risk impact is an assessment of the probability of occurrence and impacts each risk event could have on the entity. This usually includes how the event might affect the cost, time, or technical performance goals. The whole collection of detected risk events, their impact assessments, and their occurrence probability are processed to create a most crucial to the least critical rank order of recognized risks, which is referred to as risk prioritization. Prioritizing risks serves several purposes, key among them, it provides a foundation for allocating vital resources; Risk mitigation planning entails the creation of mitigation plans to manage, remove, or decrease risk to an acceptable level (Handoko et al., 2019).

A lot of studies have been done to highlight the risk management process (Sobel & Reding, 2004; Arena, Arnaboldi & Azzone, 2010; Gates, Nicolas & Walker, 2012), but these studies do not talk much about the fraud angle. Literature that enterprise risk management with fraud is very scarce and limited to certain types of organizations (Aziz *et al.*, 2018). It is well understood that fraud can have grave consequences for individuals, companies as well as society as a whole, therefore systematic enterprise risk management model is the need of the hour, to help organizations curb the risk of fraud.

Risk governance is defined as an activity carried out by an organization's board of directors and management to regulate risks and build internal control systems for the identification, measurement, and management of risk (Girangwa, 2020; Cavezzali & Gardenal, 2015). The principles of good governance that are applied to the identification, management, and communication of risk are referred to as risk governance (IFC, 2018). Risk governance, thus according to Viscelli, Beasley, & Hermanson (2016), is a sound corporate governance mechanism that allows the board of directors to align corporate goals with risk management to satisfy all stakeholders. Shad & Lai (2015), opine that risk governance principles are: transparency, responsibility, fairness, and accountability.

For organizations to reap the benefits of effective risk management, the Board of Directors and senior management must demonstrate commitment to their risk governance obligations which influences the risk culture of the organization. A solid risk governance framework promotes clarity and understanding of the organization's risk appetite as well as how the firm employees carry out their responsibilities (IFC, 2013). Risk governance should therefore include all aspects of risk management, such as determining the organization's risk appetite, risk identification, risk assessment or measurement, prioritization, mitigation actions, and continuous monitoring.

Despite extensive research on risk governance (Umaru, Abu Bakar, & Muhammad-Bashir, 2018; Erin, Olayinka, Adebola, & Abdurafu, 2020; Van der Heijden, 2019; Erin, 2020; Nahar, & Azim 2016), few studies have been conducted on state corporations, and the majority of them are unrelated to fraud, especially in independent regulatory institutions in Kenya. Many studies have been conducted to demonstrate the influence of risk governance on performance. To address the gap, It was therefore critical to investigate the relationship between risk governance and fraud in independent regulatory institutions in Kenya.

According to the Institute of Operational Risk (2018), risk aggregation denotes a stage of the risk measurement process where different risks are considered jointly to obtain an integrated risk profile. Risk aggregation is a common concept in risk management contexts. Overall, it relates to the process of summing and showing the interaction between single or individual risks, to see the bigger picture. Risk aggregation refers to the process of consolidating risk exposures from the bottom level (e.g. individual risks, contracts, lines of business, business units, subsidiaries) of a business hierarchy to a risk profile at the top level (e.g. corporate group). Risks can be aggregated primarily in two ways: between risk types and between business units. Each strategy has advantages and disadvantages (Nahar, & Azim 2016). Risk aggregation across business units is beneficial for performance evaluation because it gives an accurate picture of capital consumption at the business unit level (Filipović 2009).

Managing risks across large organizations can be a challenge. The process of identifying the impact of multiple risks on an organization requires, the ability to aggregate risks at multiple levels. The basic goal of risk aggregation is to collect several risks to arrive at a total risk exposure for all or a part of an organization. Risk aggregation allows the grouping of similar risks from different perspectives to provide a complete picture of risks across the enterprise (Brown, 2021). Despite the importance of risk aggregation, only a few studies, (Bjørnsen, K. & Aven, T, 2019; Mustafa et al.,& Inanoglu, H.; Jacobs, Jr. 2009) have been undertaken and most are related to credit risks hence the need to look at risk aggregation and fraud occurrence.

1.1.3 Mwongozo Code of Governance

Over the years, Kenya's public-sector institutions have been plagued by enormous corruption and fraud, resulting in substantial financial losses for taxpayers. Mismanagement, pilferage, and bureaucracy, as well as the irresponsibility and inefficiency of workers and directors, are some of the issues that cause State Corporations to fail in their purpose, according to the Government of Kenya Sessional Paper No. 4 of 1991 (Kuria, 2015). Several legislative instruments have been enacted to curb the fraud menace in the public sector such as the Bribery Act, 2016, and the Proceeds of Crime and Money Laundering Act, 2009.

Regulations and guidelines have also been published mandating state corporations in Kenya to adopt risk management practices and reveal the risks that the entities face as well as the mitigation measures, they have implemented. As such, Treasury Circular No 3/2009 was issued in February 2009, instructing Kenyan public institutions to undertake risk management as part of public financial management reforms (Treasury Circular No 3/2009). Consequently, state corporations in Kenya are regulated by the Mwongozo, Code of Governance for State Corporations (The Mwongozo), which is founded on the ideals stated in Article 10 of the Kenya Constitution (Githiri, 2020).

A Report on Review of Statutory Boards revealed that the majority of State Corporations were failing due to a lack of efficient systems to support their management, evidence of financial mismanagement, fraud, etc., prompting the President to appoint a task force with the mandate to review policy in the public sector to address sector-based challenges while achieving government policy objectives (Kamau, 2013). The task force observed that the challenges confronting state corporations included poor governance, which resulted in massive losses burdening taxpayers, weak and ineffective boards that failed to provide strategic direction, facilitation, and emasculation; a lack of HR and institutional capacity to attract and retain the skill set required to drive performance; and massive debts (Ochieng, 2017).

The task force's findings resulted in the creation of the Mwongozo, Code of Governance for State Corporations (The Mwongozo), which serves as a vital building block in establishing public sector principles and values, as well as best practices in corporate governance (Githiri, 2020). The Mwongozo was developed in line with the G20/OECD Principles of Corporate Governance that are intended to help policymakers evaluate and improve the legal, regulatory and institutional framework for corporate governance, to support economic efficiency, sustainable growth, and financial stability (Mukabwa, 2016). The Mwongozo generally seeks to incorporate good corporate governance principles into the management of state corporations (SCAC, 2015). Chapter 2 of the Code of Governance for State Corporation in Kenya “Mwongozo” requires state corporations to disclose in the annual report, the policy of the organization on risk management and the key risks to which the organization is exposed. It also requires state corporations to ensure complete, timely, relevant, accurate, and accessible risk disclosures to stakeholders (Mwongozo, 2016). Further, chapter 3 of Mwongozo directs that the Board should appoint a committee that shall be responsible for overseeing risk management activities of the organization, quarterly review the implementation of the risk management framework, establish a risk management function within the organization, ensure risk assessment is carried out continuously and receive assurance from management that risk management framework is integrated into the daily activities of the organization (SCAC 2015).

Despite the efforts made to ensure the public sector implements ERM and realizes the related benefits, the public sector in Kenya still faces the challenge of poor and declining performance, which inhibits the realization of sustainable economic growth. The Public sector has consistently fallen below expectations due to: Excessive regulations and controls; Frequent political interference; Poor leadership and management; Outright mismanagement (Kenya Railways, Kenya Meat Commission); Bloated staff establishments; Multiplicity of principals and non-performing employees (Nelius & Ambrose, 2017). According to Alijoyo (2021), many public sector organizations are yet to integrate risk management into organizational behavior, something that limits employee contribution to stronger outcomes through more effective engagement.

Several studies done in the past have been moderated by regulatory or governance frameworks. Kerr and Murthy (2007), in evaluating the relationship between reliable financial reporting and effective IT controls, moderated the study by using the COBIT Framework. The study discovered that the COBIT framework was critical in maintaining effective internal control over the reliability of financial reporting. Hashim, Salleh, Shuhaimi, and Ismail (2020), revealed a high risk of fraud occurrence in state-controlled companies in Malaysia. They examined the prevalence of fraud risk in state-controlled companies and moderated the study using financial reporting regulations. Adopting a similar approach, the study established the moderating effect of the Mwongozo Code of Governance, on fraud occurrence in independent regulatory agencies in Kenya

1.1.4 Independent Regulatory Agencies in Kenya

The report on State Corporations' Reforms (2013), defines independent regulatory agencies as state agencies incorporated by the government to undertake a specific government objective in delivering public service including regulation. Independent regulatory agencies play crucial roles in the national development agenda that include: promoting or accelerating economic growth and development; building the capability and technical capacity of the state in facilitating and/or promoting national development; improving the delivery of public services including meeting the basic needs of citizens; and creation of good and widespread employment opportunities in various jurisdictions.

Independent regulatory agencies in Kenya are a special category of state corporations with oversight roles over their sectors or sub-sectors. They license operators, set prices where necessary, protect consumers, enforce compliance to license conditions and market rules, and enforce standards as well as codes of practice for their particular industry. They are meant to spur growth and improve services to consumers or end-users of the services in their particular industries. As per the report on State Corporations' Reforms (2013), there are currently twenty-five (25) independent regulatory agencies in Kenya although there are plans to merge some of them to make them more efficient and effective.

Independent regulatory agencies, like other state corporations, are governed by the Board of Directors who are guided by the Mwongozo Code of Governance for State Corporation. Among the requirements of the Board according to Mwongozo is to establish a Board Committee which is to discharge the function of governance, risk, and compliance among others. The role of the Board Audit Committee in independent regulatory agencies is to establish an independent internal audit function and ensure that there is an effective risk-based internal audit system with an approved internal audit charter, among others (SCAC, 2015).

In Kenya, several guidelines and regulations have been issued requiring state corporations, including independent regulatory agencies, to implement risk management and disclose the risks facing the organization and the mitigation strategies taken. Implementation of the Enterprise Risk Management framework was launched in the state corporations vide Treasury Circular No.3/2009 and further strengthened by Mwongozo. However, despite the push by the Government for state corporations to implement ERM there are still reported cases of fraud occurring in independent regulatory agencies.

1.2 Statement of the Problem

Fraud has received increased attention from regulators, auditors, and the public due to increasing corporate failures. Most fraud cases happen within organizations rather than in external dealings. Contrary to common belief, 68% of fraud cases occur within organizations by employers and employees, with the rest externally by those in the value chain (KPMG, 2020). The Association of Certified Fraud Examiners (ACFE)'s 2020 Report to the Nations on Occupational Fraud and Abuse suggests that companies lose up to 5% of their revenue annually to fraud. The loss, if applied to the 2019 estimated Gross World Product, translates to a potential projected global fraud loss of nearly US$3.7 trillion (ACFE, 2020). Such frauds are carried out through asset misappropriation, corruption, and fraud in financial statements.

Pricewaterhouse Coopers (PWC) in its Global Economic Survey 2020 report, indicated that 37% of the fraud cases reported were from Government and state-owned enterprises. The report further estimated that organizations lose up to Kshs. 5.5 billion annually through fraud. Mutonyi (2018), also indicated that there has been massive corruption and fraud in Kenya, especially in the public sector entities which have resulted in great losses. According to Kiprono & Nganga (2018), Kenya's public sector loses over Ksh. 4 billion annually to fraud as a result of financial system vulnerabilities and insufficient fraud detection, prevention, and mitigation, resulting in poor sector performance.

Despite the efforts made to ensure the public sector implements Enterprise Risk Management and realizes the related benefits, the public sector in Kenya still faces the challenge of poor and declining performance, which inhibits the realization of sustainable economic growth (Nzioka, 2015, Nelius & Ambrose, 2017, Ochieng, 2017). Many state corporations, including independent regulatory agencies, are yet to integrate enterprise risk management into organizational conduct (Alijoyo, 2021). Kenya's public-sector institutions have been riddled with massive corruption and fraud, causing the government to issue regulations aimed at strengthening control over fraud risks and limiting their likelihood and impact (Githiri, 2020).

Extant researchers indicate that ERM has far-reaching benefits to organizations both the public and private. Mutuku (2016), investigated the effect of risk management on financial performance in banking institutions in Kenya and established that good management of risks enhances the performance of banking institutions as it leads to good financial reports and also leads to better decision-making of the investors. Girangwa (2020), studied the influence of ERM practices on organizational performance in Kenyan state corporations; study outcomes indicated that risk structure, governance, and process practices had a positive and significant effect on organizational performance.

Negative and inconclusive correlation has also been noted by several researchers on the effects of ERM. The argument is that in the absence of market inefficiencies, investors can undo any financial transaction undertaken by a firm, meaning that the firm value is independent of the risk management strategy (Avwokeni, 2018). Wong (2020), also suggested that corporate derivatives positions, in general, are far too small to account for the valuation premiums reported in some of these studies. Lagat & Tenai (2017), also noted that risk identification was not significantly related to financial performance. Amolyoto (2014), sought to identify the challenges encountered in the implementation of the IRMPF in the Government ministries; the study concluded that the key players did not properly understand the IRMPF implementation. The inconsistencies in the findings of the researchers on the value or rather relevance of enterprise risk management not only indicated that there was room for the current research as a lot of relevant issues in the current study were yet to be studied and exhausted, the researcher also introduced Mwongozo Code as a moderating variable. This is based on the assumption of introducing a moderator given by (Baron & Kenny, 1986; Frazier, Tix, & Barron, 2004; Hair Jr, Hult, Ringle, & Sarstedt, 2014; Sarstedt, Ringle, & Hair, 2017).

Reviewed literature alludes to a paucity of research done on the concept of enterprise risk management on fraud occurrences, particularly in Kenya. Although diverse literature suggests the many possible benefits of enterprise risk management to organizations, empirical work examining the relationship between enterprise risk management on fraud occurrences, particularly in the public sector is scarce. Whereas most empirical literature covered in this study explores enterprise risk management, the focus is on the value and relevance of ERM and its effect on a firm's financial performance. This means that there was need for more studies to examine the effects of ERM implementation on fraud occurrence among independent regulatory agencies in Kenya. Similarly, whereas most empirical literature covered looks to critique the implementation and effectiveness of the Mwongozo Code of Governance (Githiri, 2020; Ochieng, 2017; Kuria, 2015; Kamau, 2013), the gap was to show whether the Mwongozo Code has a moderating effect on the relationship between the ERM and fraud occurrences. Thus the research study sought to address the inconsistencies in the previous research by evaluating the effects of Enterprise Risk Management (ERM) on fraud occurrence in independent regulatory agencies in Kenya. As measures of enterprise risk management, the study focused on the risk management process, risk governance, risk aggregation, and the moderating effect of the Mwongozo code of governance.

1.3 Objectives of the Study

1.3.1 General Objective

The purpose of this study was to establish the effect of Enterprise Risk Management (ERM) on fraud occurrence among independent regulatory agencies in Kenya.

1.3.2 Specific Objectives

The specific objectives of the study were:

i. To determine the effect of the risk management process on fraud occurrence among independent regulatory agencies in Kenya

ii. To determine the effect of risk governance on fraud occurrence among independent regulatory agencies in Kenya

iii. To determine the effect of risk aggregation on fraud occurrence among independent regulatory agencies in Kenya

iv. To determine the moderating effect of the Mwongozo Code of Governance on the relationship between ERM and fraud occurrence among independent regulatory agencies in Kenya

1.4 Research Questions

The study sought to address the following research questions; -

i. What is the effect of the risk management process on fraud occurrence among independent regulatory agencies in Kenya?

ii. What is the effect of risk governance on fraud occurrence among independent regulatory agencies in Kenya?

iii. What is the effect of risk aggregation on fraud occurrence among independent regulatory agencies in Kenya?

iv. What is the moderating effect of the Mwongozo Code of Governance on the relationship between ERM and fraud occurrence among independent regulatory agencies in Kenya?

1.5 Scope of the study

The study aimed at establishing the effect of Enterprise Risk Management (ERM) on fraud occurrence among independent regulatory agencies in Kenya. The study covered the 25 independent regulatory agencies in Kenya. ERM in the public sector strengthens the capacity of the Government to diagnose, appreciate, manage and take advantage of emerging challenges and opportunities to optimize performance improvement within public sector organizations (Nawafleh 2020). The study's goal was to investigate the risk management process, risk governance, and risk aggregation to establish their effect on fraud occurrence among independent regulatory agencies in Kenya. The study also sought to determine the moderating effect of the Mwongozo Code of Governance on fraud occurrences among independent regulatory agencies in Kenya. The study was conducted between February and March 2022.

1.6 Significance of the Study

1.6.1 Independent Regulatory Agencies

This study is significant to independent regulatory agencies as it offers valuable contributions from both a theoretical and practical perspective. Theoretically, it contributes to the general understanding of Enterprise Risk Management and its effect on fraud occurrence. The study will enable independent regulatory agencies in Kenya to improve their risk management practices and to adopt efficient strategies to improve the management of fraud; enabling them to perform better and maintain a competitive advantage.

1.6.2 Public

The public will also benefit from the study through improved services and reduced levels of fraud occurrence in regulatory state corporations and the public sector in general. This can result in affordable services and a reduction in levels of non-payment and fraud. The study is helpful to the government in setting regulations on the service sector in Kenya through the regulatory authorities and safeguarding public resources.

1.6.3 Theorists

Concerning academic theory, it will significantly increase the existing knowledge about enterprise risk management and the management of fraud. It is further hoped that the insights gathered in this preliminary study will help to generate greater awareness for enterprise risk management and in turn elicit enthusiasm for their promotion while possibly leading reduced level of fraud occurrence in independent regulatory agencies.

1.6.4 Policy Makers

Policymakers such as SCAC and the National Treasury will also find the study relevant and useful by having access to this literature and information which can be applied to improve existing policies or to address stalled policy formulation processes on enterprise risk management and Mwongozo Code in the public sector.

CHAPTER TWO

2 LITERATURE REVIEW

2.1 Introduction

This chapter discusses a theoretical review of the study. First, theories that inform the study are discussed in detail and deductive arguments are made based on the concepts of these theories. Second, the conceptual framework that describes the relationship between independent variables and dependent variables is discussed concerning the theories of study. Third, empirical review discussing related studies carried out in the local and international context, illustrating their findings and gaps. The summary of research gaps highlighting issues that were not addressed by previous studies carried out in the local and international context are also discussed.

2.2 Theoretical Review

To fully understand the independent and dependent variables, the study adopted a multi-theoretical approach as opposed to a single theory approach. Numerous theories have been discussed on enterprise risk management and fraud; however, this study is anchored on agency theory, fraud triangle theory, and stakeholder theory which are particularly relevant for this study.

2.2.1 Agency Theory

Agency theory was first introduced by Stephen Ross and Barry Mitnick in 1973 (Mitnick, 2013) and is characterized by the conflict of interest between the principal (owners) and agents (managers), known as an agency problem. Further developments by Jensen and Meckling (1976), an agency relationship is a contract in which one or more persons (the principals) contract another person (the agent) to conduct a service on their behalf, and the principals delegate some decision-making authority to the agent. The principals are risk averse, while the agents are risk and effort averse, thus according to the agency theory. The agents and principals are assumed to be motivated by their self-interests, although this isn't always the case (Agustina & Baroroh, 2016). In this context, there is a conflict between the stockholders' (principals) interests, who demand optimal returns on their capital, and the management's (agents) interests, who desire fair compensation for the achievements. ERM, as part of the existing corporate governance framework, comes to provide certainty on the management of risks that there will be operational certainty in the future for the company, and the agents deserve to be rewarded for their efforts in giving future certainty.

The interrelationship between the primary owner of a project and the agent is examined in agency theory. The principle assigns work to the agent, who is then expected to do it (Hakenberg, 2007; Eisenhardt, M, K. 1989). However, there are two major problems in this relationship: it may be difficult for the principal to determine the agent's activities, and competing aims between the agent and the principal may develop when the principal attempts to manage the agent to maximize his gains. As a result, there is a conflict of interest. In addition, the two parties have opposing views on risk. The theory is primarily concerned with how the agent may be compelled to operate in line with the principal, which is why it is relevant to this research. A so-called agency dilemma emerges, resulting not just from the players' egoism but also from knowledge asymmetries to the agent's advantage.

ERM practices are thought to provide security against current risks that will most likely manifest themselves in the future on resources invested by the principal agents. The presence of ERM indicates that an agent has authority over the execution of imminent organizational tasks. ERM is indicated as a procedure implemented by the entity's Board of Directors to deal with concerns that revolve around agency and information asymmetries inside the company. Because of these flaws, a company may engage in formal risk management even when external frictions aren't present, or fail to do so when external frictions are impending. As a result, agency theory adds to corporate risk management theory, which focuses on mitigating the effects of friction that exist between the agents and the principals (Girangwa, 2020).

The theory anchors the need to implement risk management as a way of managing risks between principals and agents. This is linked to the objectives of the study, as the study examines whether this enterprise risk management that has been implemented in line with the theory, plays a role in mitigating fraud occurrences.

2.2.2 Fraud Triangle Theory

The Fraud Triangle theory was put forward by D. R. Cressey in 1953, a criminologist who studied fraud by arguing that there must be a reason behind everything people do. Cressey (1973), believed three factors, namely pressure, opportunity, and rationalization, are among the determinants of fraud. He ascertained that the perpetrator of fraud must formulate some morally acceptable idea to them before engaging in unethical behavior, every person committing fraud must be facing some perceived coercion to behave unethically (Kiprono & Nganga, 2018). Lister (2007), further stated that pressure is a significant factor to commit fraud and determined three types of pressure which are personal, employment stress, and external pressure; thus defined the pressure to commit fraud as the source of heat for the fire.

Pressure is an incentive that encourages people to cheat because of lifestyle demands, financial powerlessness, gambling behavior, trying to beat the system, and job dissatisfaction. Opportunity is a situation or condition that allows fraud to occur. Opportunities occur because of weaknesses in internal control, ineffective management supervision, or abuse of position or authority. The thing that stands out the most here is in terms of internal control. Poor internal control will give people the opportunity to commit fraud. Rationalization is an important element in the occurrence of fraud, in which perpetrators seek justification for their actions. Attitude or character is what causes one or more individuals to rationally commit fraud. The Fraud Triangle theory, therefore, encourages an organization to embrace voluntary risk assessments to strengthen the internal control system and reduce the likelihood of fraud being perpetrated (Deloitte 2018). The study investigates this assertion by examining the effect of enterprise risk management on fraud occurrence in independent regulatory agencies.

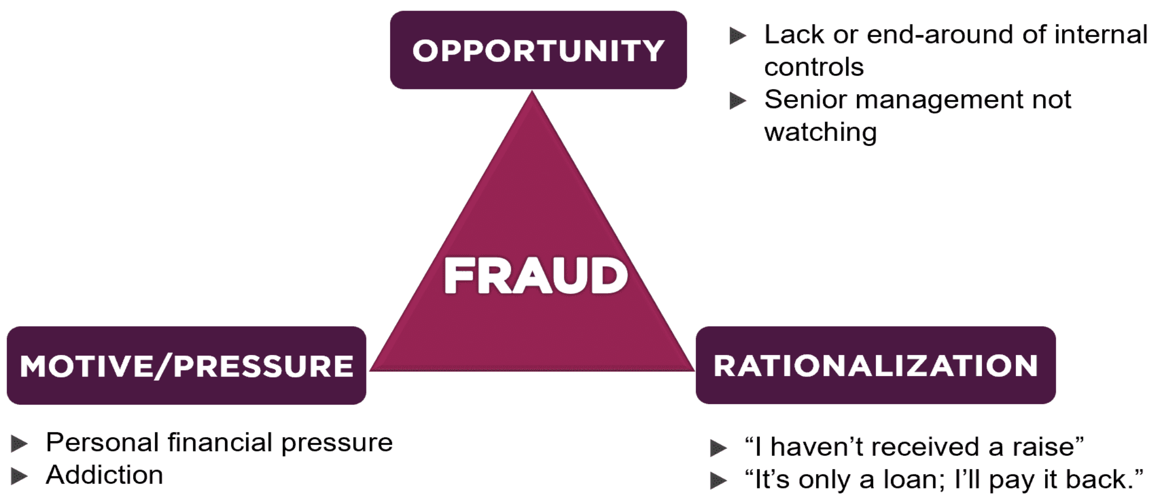

Figure 2-1: Fraud Triangle

Source: Anders, 2020

Critics of the fraud triangle argued that it provides a limited perspective since it is difficult to observe the rationalization and pressure effect, and it ignores important factors like the capabilities of the fraudster, culture, etc (Geetha, 2015). Wolfe and Hermanson (2004), appreciated that pressure might co-exist with the opportunity for a person to perpetrate fraud after internal rationalization. Fraud will still be impossible to commit unless the fourth component, capability, is present. The capability component takes into account the fraudster's position or function within the organization which may furnish the ability to create or exploit an opportunity for fraud not available to others, which also includes the fraudster's ability to exploit internal control weakness. Wolfe and Hermanson (2004), dubbed this triangle the fraud diamond after including "capability" in the Fraud Triangle. They believe that the majority of frauds are performed when a person feels he or she has the potential to commit fraud but lacks the legal authority to do so.

The theory will be used in this study since it suggests that fraud occurs as a result of weaknesses in controls and the various financial challenges that employees confront but are unable to disclose to management or colleagues. Employees' lack of moral reasoning and integrity leads to rationalization, which justifies their fraudulent behavior. The theory calls for enhanced risk assessment to strengthen controls hence the linkage with this study as it attempts to investigate the relationship between enterprise risk management and fraud occurrence.

2.2.3 Stakeholder Theory

Dr. F. Edward Freeman (1984), set the agenda for what is now known as Stakeholder Theory, in his book, Strategic Management: A Stakeholder Approach published in 1984 and reprinted in 2010. The Stakeholder theory suggests that shareholders are merely one of many stakeholders in a company. The stakeholder ecosystem, this theory says, involves anyone invested and involved in, or affected by the company including employees, environmentalists near the company's plants, vendors, governmental agencies, and more. Freeman's theory suggests that a company's real success lies in satisfying all its stakeholders, not just those who might profit from its stock. Therefore, if organizations implemented effective governance practices such as the Mwongozo Code of Governance, this could encourage shareholder engagement consequently positively impacting firms' performance and reducing cases of fraud and corruption.

Consistent with this theory, an organization is not only required to be obliged in making more profits for its equity holders but it should also make sure that its stakeholders are more satisfied. Stakeholder theory argues that organizations should balance a multiplicity of stakeholders' interests. The theory recognizes that organizations are obliged to have several stakeholders especially all those related to the firm and that organizations should treat all stakeholders fairly to improve their performance and competitiveness in the marketplace (Muchiri, Gericke, & Rheeder, 2019). Stakeholder theory emphasizes that managers must act in interests of all stakeholders and not just fulfill shareholder wealth maximization goals. This is because stakeholders are individuals with a stake in the company and opposing their satisfaction can drastically and negatively deteriorate the company image diminishing competitive advantage and reducing firms' performance. Thus, proponents of stakeholder theory argue for the inclusion of all stakeholder groups on the boards of directors to achieve effective corporate governance, reduce conflicts, and enhance efficiency (Kamau, 2013).

Stakeholder theory argues that businesses should seek to balance the interests of their diverse stakeholders so as to give each constituency some level of satisfaction. The theory, therefore, is considered to be an ethical and business management perspective that is intended to expound on both morals and values, particularly in the management of business enterprises. Therefore, businesses have responsibilities to clients, particularly on affordable and fair pricing; quality service, and product safety among others. Their responsibilities to investors include risk mitigation and high return on investments. They also have responsibilities to suppliers in terms of ensuring fairness and truthfulness in all dealings with suppliers especially pricing and licensing.

Chapter 6 of the Mwongozo Code recognizes the need of safeguarding stakeholder relationships. The stakeholder idea is therefore preserved in the governance code, allowing the Board to conduct stakeholder mapping, establish rules to manage stakeholder interactions, open lines of contact with stakeholders, and document stakeholder interests, expectations, and any impact they may have (Githiri, 2020). Stakeholder theory can therefore not be ignored as it plays a crucial role in the support and growth of a State Corporation as can be seen in its provision in the Mwongozo Code of Governance for State Corporations in Kenya. Further, in line with chapters 2 and 3 of Mwongozo, It is paramount that state corporations identify risks that may affect them from satisfying their stakeholders and ensure that organizational objectives are met. The theory is linked to the study as the study examines whether this code advocated for implementation in order to manage stakeholders has any effect on the relationship between enterprise risk management and fraud occurrence.

2.3 Empirical review

The following subsections present a review of studies conducted and the research findings the researchers came up with in line with the specific objectives of their studies. It highlights the recommendations they formulated as a result of the research methodologies they employed, and the reasons explaining the consistencies and inconsistencies in the research findings they arrived at.

2.3.1 Risk Management Process and Fraud Occurrences

Studies done on risk management processes have shown inconsistent results on its impact on performance. Mutuku (2016), and Ewool & Quartey (2021), noted a moderate to strong relationship between risk management practices and financial performance. In his research, Mutuku (2016), focused on Kenyan banks and classified risk management practices adopted by Kenyan banks into: did a survey to analyze the risk management practices embraced by Kenyan Commercial Banks; Risks management environment, risk monitoring, risk measurement, internal controls, capital adequacy, and investment guidelines and strategic guidelines. He obtained primary data through an organized survey using a structured questionnaire that was conveyed to the 42 Commercial Banks in the country. Secondary data was obtained from the specific banks' websites and published financial results. Findings revealed that risk management practices under study positively and significantly affected the financial performance of commercial banks with an exception of capital adequacy and risk monitoring which had a negative effect.

Ewool & Quartey (2021), on the other hand, focused on microfinance institutions (MFIs) in the Kumasi metropolis of Ghana. Financial performance measures used were Return on Asset (ROA) and Return on Equity (ROE). The RMPs in question included risk identification, risk appraisal, risk control, risk monitoring, and often practiced risk management. This study adopted a quantitative research approach and made predictions on the correlation between variables in a statistical manner. The multi-staged sampling was adopted as been cluster and purposive sampling method. Study findings observed moderate to strong correlations between the risk management practices (risk identification, risk appraisal, risk control, and risk monitoring) and financial performance which is very important since these factors can bolster the MFIs financial performance if undertaken. Monitoring of MFIs risk management practices was positively significant in this study and must be adhered to at all stages of risk management practices to ensure good financial performance.

A divergent study finding was however observed by Lagat & Tenai (2017), who adopted an explanatory research design using stratified random sampling to investigate the effect of risk identification on the performance of financial institutions. Primary data was collected from managers of commercial banks, Micro Finance institutions (MFIs), and SACCOs, a sample size of 239 respondents was obtained. The study recommends regulators to consider and appropriately legislate risk identification practices to enhance the performance of financial institutions. Their study adopted an exploratory research design and the results model indicated that the risk identification (β=0.026) was not significantly related to financial performance.

2.3.2 Risk Governance and Fraud Occurrences

The correlation between risk governance and performance is ambiguous and contradictory in empirical studies. Nahar *et al*. (2016); Girangwa (2020); Erin, Bamigboye, & Arumona (2020); found a positive relationship, while Salaudeen *et al*. (2018) found a mixed relationship, whereas Hutchinson (2011) observed no association between risk governance and performance. Institutional variations in the nations investigated might be the cause of the inconsistent results (Girangwa, 2020).

Nahar, Jubb & Azim (2016), in their study, investigated the association between risk governance and bank performance in a country where disclosure of risk information is virtually voluntary. The study adopted an observational research design comprising hand-collected data for the period 2006-2012 and used regression analysis to test whether a significant relationship exists between risk governance and banks' accounting- and market-based performance. It examined risk governance in terms of risk disclosure, the number of risk committees, and the existence of a risk management unit, controlling for other corporate governance variables. Accounting-based performance was measured by return on equity (ROE) and return on assets (ROA); market-based performance was measured by Tobin's q and buy-and-hold returns. The results show that there is a significant positive relationship between risk governance and bank performance measures used in the study. Further empirical evidence in the paper suggested that risk governance characteristics can be used as channels to improve bank performance.

Similarly, Girangwa (2020), purposed to determine enterprise risk management's effect on the organizational performance of state corporations in Kenya. The results revealed that risk structure, governance, and process practices had a positive and significant effect on organizational performance. The study used an explanatory cross-sectional survey design and primary data was collected from structured questionnaires. It contributed to theory by centering enterprise risk management on the empirical testing of agency theory on the relationship between enterprise risk management practices and organizational performance. Additionally, the study recommended that policymakers in state corporations ought to integrate risk management practices across all functions and business units to address risks before they even occur.

On the other hand, Erin, Bamigboye, & Arumona (2020), examined the influence of risk governance on the financial performance of 50 quoted firms in the Nigerian financial sector for the period of five years (2013–2017). Panel data were used to examine how the risk governance variables (Enterprise Risk Management -index, Chief Risk Officer - presence, Board Risk Committee - size, Board Risk Committee - activism, and Board Risk Committee - independence) affect financial performance (Return on Asset). The study revealed empirically that most of the risk governance variables have a significant and positive impact on the performance of the firm except for BRC - size which shows a negative association with the financial performance of the studied firms. The study empirically reveals that a strong Chief Risk Officer (CRO) presence, an effective board risk committee, and the inclusion of independent directors in the risk committee will go far in serving as factors that would improve the performance of firms in today’s financial environment.

Contrary to the findings of the above studies, Salaudeen, Atoyebi & Oyegbile (2018), found a significant negative effect between the existence of an audit committee and performance. The study also found no significant effect between the existence of a chief risk officer and performance. The study evaluated the relationship between ERM and the performance of 20 consumer goods companies listed on the Nigerian Stock Exchange. The independent variables of the study comprised the existence of a risk management committee, the existence of financial expertise, the existence of an audit committee, the existence of a Chief risk officer, and board size. It adopted an ex post facto research design. The study concluded that regulatory authorities and other relevant institutions should be urged to reconsider their supervisory roles to enhance the ERM process and to take risk management seriously at all levels of companies to offer reasonable assurance.

2.3.3 Risk Aggregation and Fraud Occurrences

The correlation between risk aggregation and performance is also ambiguous and contradictory in empirical studies. While Quon, Zeghal, & Maingot (2012), found a negative relationship, Laisasikorn, K. & Rompho, N., (2014), the study was inconclusive on the association between the two variables.

Quon, Zeghal, & Maingot (2012), investigated the relationship between ERM and non-financial corporate performance on the Toronto Stock Exchange. ERM was assessed using the ERM framework practices of fourteen different types of risks, with each being assessed for the risks presented, the level of risk exposure, the risks' imports, and the risk management measures discovered. According to the study, the financial crisis had an immediate impact on financial market performance and a delayed impact on accounting and operational performance. Furthermore, organizations with contrasting results did not report average levels of market or economic risk exposure or statistically significant differences in outcomes. According to the findings, ERM structural practices had no meaningful impact on organizational performance.

Laisasikorn, K. & Rompho, N. (2014), on the other hand, investigated the link between a good business risk management system, a good performance measurement system, and the financial performance of all Thai Stock Exchange companies. The risk culture, procedure, defined duties, and infrastructure of the enterprise risk management system were all evaluated. Earnings per share, return on Equity, and Return on Assets was acquired from the Thailand Stock Exchange online database to determine financial performance. The study discovered that there was no statistically significant association between the performance measurement system of an enterprise risk management system (i.e. ERM structure practices) and a company's financial performance. Based on the findings, it is obvious that the relationship between risk aggregation and organizational performance is inconclusive.

2.3.4 The Mwongozo Code of Governance and Fraud Occurrences

Gitonga (2019) and Obonyo (2017), found a positive relationship between corporate governance instruments and performance. In his study, Gitonga (2019), explored the influence of corporate governance on the financial performance of listed corporations with government shareholding in Kenya. The study adopted a census design where all target corporations were sampled. The results showed that there was a moderate positive correlation between financial transparency, internal audit standards, internal controls, ownership structure, and financial performance. Regression analysis results showed that financial transparency, internal audit standards, internal controls, and ownership structure explain 71 percent of the variance in the financial performance of corporations. The study established that financial transparency leads to reduced conflicts between shareholders and managers. It recommended that the management of corporations should adhere to laid down regulations on financial disclosure to avoid agency conflicts with shareholders and creditors

On his part, Obonyo (2017), sought to establish the extent to which internal audit practices contribute to the success of fraud risk management in State Corporations in Kenya. He found that internal audit practices; fraud policy, periodic assessment of fraud risk exposure, fraud prevention, and fraud detection when combined contribute to the success of fraud risk management in state corporations in Kenya. The study recommended that State corporations should promote fraud policy as part of their key policies in terms of governance and strengthen their measures as a way of facilitating internal audits in the organization. Further, to ensure successful fraud risk management; State corporations must analyze and assess periodic fraud risk exposure in the organization as a way of promoting internal audits that may positively impact the institution's success in fraud risk management.

2.4 Summary of Literature and Research Gap

Because the literature review indicated that the majority of the studies were qualitative and used an empirical review study of secondary data, no primary data study was conducted. As a result, making a complete conclusion on the relationship between the factors is challenging. This study adopted a positivism research method and collected primary data to investigate the relationship between ERM and Fraud occurrence.

Further inconsistencies from reviewed studies on the value relevance of ERM, where Mutuku, 2016; Ewool & Quartey, 2021 and Erin, Bamigboye, & Arumona, 2020 noted that ERM significantly affected the firm's performance while Lagat, & Tenai, 2017; Girangwa, 2020 and Quon, Zeghal, and Maingot, 2012 found a negative relationship between ERM and the firm's performance make a compelling argument for more studies and information gathering to improve understanding, provide universally established policy standards for suitable ERM practices, and increases the advantages of using ERM practices in organizations. Given the conceptual, contextual, and methodological limitations, the purpose of this study was to address these research gaps by investigating the effect of ERM on fraud occurrences in independent regulatory agencies in Kenya.

According to the study by Oketch, Kilika, and Kinyua (2020), the legal environment has a strong moderating influence on the link between top management team characteristics and the effectiveness of Kenya's independent regulatory bodies. The findings of the study by Mutuma, Iravo, Waiganjo, and Kihoro (2017), similarly revealed that national government policies had no significant impact on workforce autonomy, which influenced service delivery. The study concluded that there was a moderately strong correlation between workforce autonomy and service delivery. This study, therefore, sought to determine the moderating effect of the Mwongozo code of governance on fraud occurrences in independent regulatory agencies in Kenya

The summary of the literature review and identified research gaps are presented in Table 2-1 below.

Table 2-1: Summary of Literature Review and Research Gaps

Review Author(s)	The topic of study and objectives	Key findings	Gaps	Focus on the current study
Lagat, & Tenai, (2017)	The effect of risk identification on the performance of financial institutions.	From the model results, the risk identification (β=0.026) was positively related to financial performance but the relationship was not significantly. The study recommends regulators consider and appropriately legislate risk identification practices to enhance the performance of financial institutions.	Their study adopted an exploratory research design which is a quantitative study design used to systematically assess the results of previous research to derive conclusions about that body of research.	This study adopted an explanatory research design that was applied using primary data.
Mutuku (2016)	The effect of risk management on the financial performance of commercial banks in Kenya	Findings revealed that risk management practices under study significantly positively affected the financial performance of commercial banks with the exception of capital adequacy and risk monitoring which had a significant negative effect.	The study adopted a survey design which may not have been ideal as the study population was not very small.	This study adopted an explanatory research design where primary data was used.
Ewool & Quartey (2021)	Evaluation of the Effect of Risk	The findings of the study revealed that the selected MFIs were doing well in	This study adopted a quantitative research	This study adopted an explanatory research

	Management Practices on the Performance of Microfinance Institutions	terms of returns on assets and Equity. The moderate to strong positive correlations observed between the risk practices and the financial performance is very important since these factors will help boost the MFIs financial performance if they are undertaken.	approach with no secondary data or qualitative data to complement the findings of the quantitative data and get the perceptions of the study respondents.	design where primary data was used.
Erin, Bamigboye, & Arumona (2020)	Risk Governance And Financial Performance: An Empirical Analysis	The study reveals that most of the risk governance variables have a significant and positive impact on the performance of the firm except for BRC - size which shows a negative association with financial performance. The study also reveals that a strong Chief Risk Officer presence, an effective board risk committee, and the inclusion of independent directors in the risk committee will go far in serving as factors that would improve the performance of firms in today's financial environment.	The research was an empirical review and hence only utilized secondary data, with no primary data to complement the findings of the desk review.	This study adopted an explanatory research design where primary data was used.

Nahar, Jubb & Azim, (2016)	Risk governance and performance: a developing country perspective	The results show that there is a significant relationship between risk governance and bank performance measures used in this study. Empirical evidence in this paper suggests that risk governance characteristics can be used as channels to improve bank performance. In addition, stakeholders may find these results useful in selecting their preferred bank	The study adopted an observational research design which can be difficult to control variables since the researcher won't have control over the environment and observers must make major attempts to control their biases, which may heavily influence what they observe, record, and interpret.	This study adopted an explanatory research design where primary data was used.
Girangwa (2020)	The Influence of Enterprise Risk Management Practices on Organizational Performance:	The results revealed that risk structure, governance, and process practices had a positive and significant effect on organizational performance. This study contributes to theory by centering enterprise risk management on the	Their study adopted a correlational research design to investigate the relationships between the variables. Their focus was however on organizational	This study adopted an explanatory research design to investigate and describe the relationship between the study variables with

	Evidence from Kenyan State Corporations	empirical testing of agency theory on the relationship between enterprise risk management practices and organizational performance.	performance.	an emphasis on fraud occurrences.
Quon, Zeghal, and Maingot (2012)	The relationship between ERM and non-financial corporate performance on the Toronto Stock Exchange	According to the findings, ERM structural practices had no meaningful impact on organizational performance. The financial crisis had an immediate impact on financial market performance and a delayed impact on accounting and operational performance, according to the study	Their study employed an exploratory research methodology, which is a quantitative study design that involves carefully evaluating the outcomes of prior research to draw conclusions about that body of knowledge.	This study adopted an explanatory research design using primary data.
Laisasikorn, K. & Rompho, N., (2014)	The relationship between an effective ERM system, performance measurement system, and financial performance of all companies on the	The study found that the relationship between enterprise risk management system (i.e. ERM structure practices) performance measurement system and a company's financial performance were not significant statistically. Based on the findings it is clear that there are inconclusive outcomes on the	Their study adopted a meta-analysis research design which is a quantitative study design used to systematically assess the results of previous research to derive conclusions about that body of research.	This study adopted an explanatory research design where primary data was used.

	Thailand Stock Exchange	relationship between risk aggregation and organizational performance.		
Gitonga (2019)	Influence of corporate governance on the financial performance of listed corporations with government shareholding in Kenya	The study established that financial transparency, internal audit standards, internal controls, and ownership structure explain 71 percent of the variance in the financial performance of corporations. Further, financial transparency leads to reduced conflicts between shareholders and managers	Unit of analysis for the study comprised only 12 listed state corporations in Kenya with shareholding from the government. The population was too small to conclusively draw conclusions from	The population of the study was the 25 independent regulatory agencies in Kenya.
Obonyo (2017)	The extent to which internal audit practices contribute to the success of fraud risk management in State Corporations in Kenya	Internal audit practices; fraud policy, periodic assessment of fraud risk exposure, fraud prevention, and fraud detection when combined contribute to the success of fraud risk management in state corporations in Kenya.	The study adopted proportionate stratified random sampling which is limiting in scope and the findings may not be a representation of the entire population.	The study adopted a census survey that targeted all the independent regulatory agencies in Kenya.

Source: Researcher, 2022

2.5 Conceptual Framework

The conceptual framework (Figure 2.2) shows the researcher's schematization of the current study variables' relationships. It gives a proper process of theorization for building concepts based on formulated theories. It depicts how the enterprise risk management framework comprising risk management practices, risk governance practices, and risk aggregation (independent variables) influence the level of fraud occurrence characterized by corruption, asset misappropriation, and financial statement fraud (dependent variable).

The risk management process (risk identification, risk assessment, risk mitigation, and Risk monitoring) as an independent variable was operationalized in terms of how they are curbing the level of fraud occurrence (corruption, asset misappropriation, and financial statement fraud) in independent regulatory agencies in Kenya. In line with the agency theory, the study sought to establish whether management through the implementation of appropriate risk governance structures, undertakes risk identification and risk assessment that informs prioritization of risks followed by coordinated and economical application of resources to monitor, control the probability, and/or impact of unfortunate events and in turn lead to successful management of fraud occurrence.

Risk governance as an independent variable was operationalized in terms of how effective it is in mitigating the level of fraud occurrence (corruption, asset misappropriation, and financial statement fraud) in independent regulatory agencies in Kenya. The study sought to ascertain whether risk governance practices provide the right tone at the top that leads to the successful management of fraud occurring in the organization.

Risk aggregation as an independent variable was operationalized in terms of how effective it is in ascertaining the level of fraud occurrence (corruption, asset misappropriation, and financial statement fraud) in independent regulatory agencies in Kenya. In line with the fraud triangle theory, the study sought to establish whether the theoretical proposition of the model is that risk aggregation (independent variable) leads to the successful management of fraud occurrence (dependent variable).

Mwongozo guide as a moderating variable was used to establish if sufficient guidance is offered in coming up with proper guidelines and controls leading to the mitigation of fraud occurrence (dependent variable). The Code of Governance, Mwongozo was employed as a moderating variable to establish if it strengthens, negates, or changes the relationship between the independent and dependent variables. It was operationalized on a categorical scale and then transformed into dichotomous data for interaction with the variables in the regression model to ascertain the moderating effect. The constructs and relationships between researches variables are illustrated in figure 2.2 below;

Source: Researcher, 2022

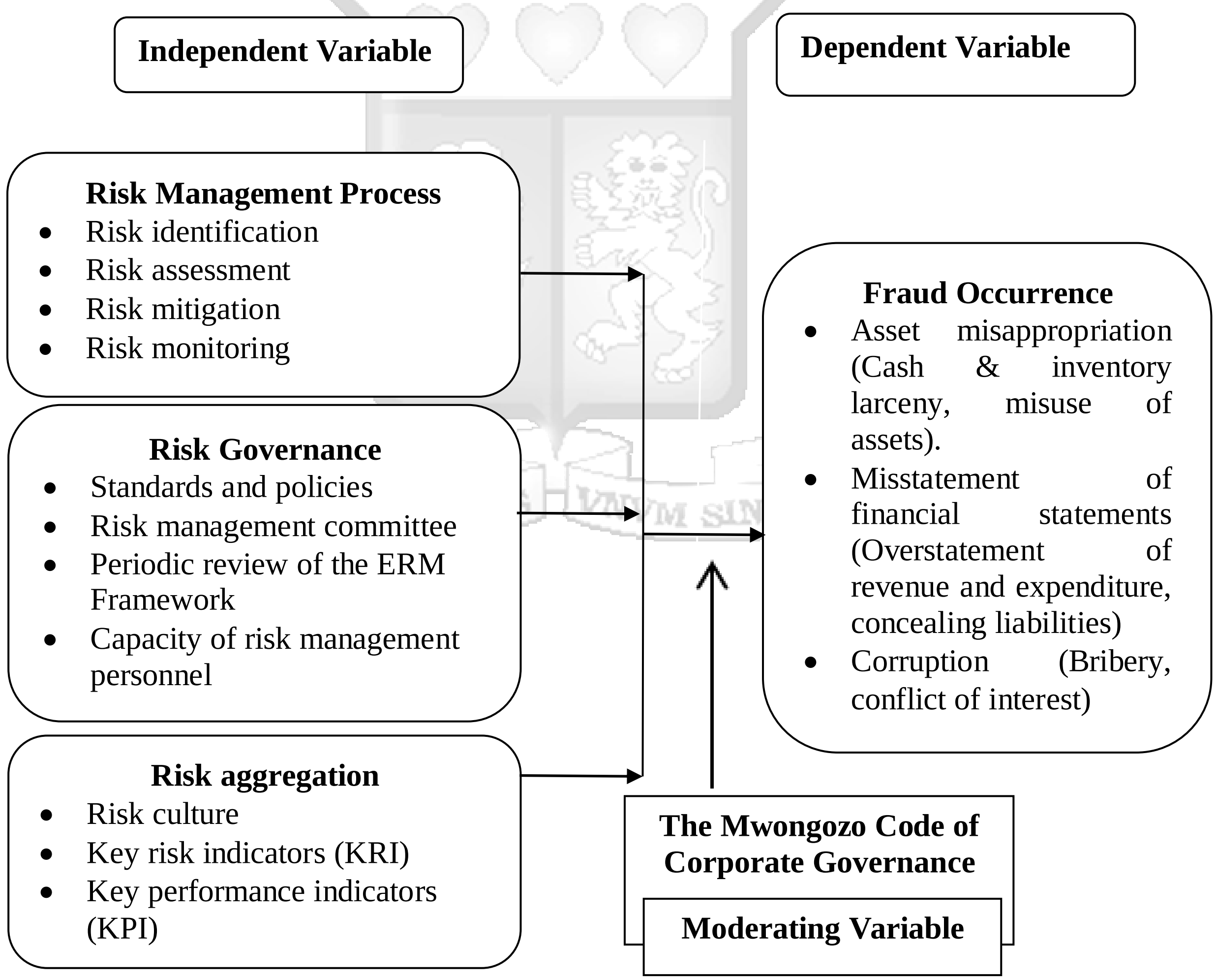

Figure 2-2: Conceptual Framework

2.6 Operationalization of the Variables

Table 2-2: Operationalization of the Research Variables

Category	Variable	Operationalization	Measurement	Measurement Scale	Indicators	Measurement scale	Supporting Literature	Supporting theory
Independent Variable	Risk management process	A written document that details the organization's risk management process.	• Primary data	• Ordinal	• Risk identification • Risk analysis • Risk response planning • Risk monitoring and control	Likert Scale of 1-5 5=strongly agree 4 =agree 3=not sure 2= disagree 1=strongly disagree	Lagat, & Tenai, (2017), Mutuku (2016) and Ewool and Quartey (2021)	Agency theory
	Risk Governance	The institutions, rules conventions, processes, and mechanisms by which decisions about risks are taken	• Primary data	• Ordinal	• Standards and policies • Risk management tools • Contracts and	Likert Scale of 1 -5 5=strongly agree 4 =agree	Erin, Bamigboye, and Arumona (2020), Nahar, Jubb and Azim, (2016)	Agency theory

		and implemented			commitments • Statutory and regulatory controls	3=not sure 2= disagree 1=strongly disagree	and Girangwa (2020)	
	Risk aggregation	A hierarchical approach that considers how ERM responsibilities and tasks are distributed among people and functions.	• Primary data	• Ordinal	• Risk culture • Key risk indicators (KRI) • Key performance indicators (KPI)	Likert Scale of 1 - 5 5=strongly agree 4 =agree 3=not sure 2= disagree 1=strongly disagree	Quon, Zeghal, and Maingot (2012) and Laisasikorn (2014)	Stakeholder theory
Dependent Variable	Fraud Occurrence	Asset misappropriation	• Primary data	• Ordinal	• Misuse of assets • Cash larceny • Inventory larceny • Payroll	Likert Scale of 1-5 5=strongly agree 4 =agree 3=not sure	(Mwangi & Ndegwa, 2020). (Mpiana, 2017). (ACFE, 2018;	Fraud triangle theory

					schemes	2= disagree 1=strongly disagree	Deloitte, 2018).	
		Misstatement of financial position	• Primary data	• Ordinal	• Revenue overstatement • Expenditure overstatement • Cut-off period not observed	Likert Scale of 1-5 5=strongly agree 4 =agree 3=not sure 2= disagree 1=strongly disagree	(Mwangi & Ndegwa, 2020). (Mpiana, 2017). (ACFE, 2018; Deloitte, 2018).	Fraud triangle theory
		Corruption	• Primary data	• Ordinal	• Bribery • Conflict of interest	Likert Scale of 1-5 5=strongly agree 4 =agree 3=not sure 2= disagree	(Mwangi & Ndegwa, 2020). (Mpiana, 2017). (ACFE, 2018; Deloitte,	Fraud triangle theory

						1=strongly disagree	2018).	
Moderating Variable	The Mwongozo Code of Corporate Governance	A policy document that seeks to incorporate the principles of corporate governance in the management and governance of State Corporations in Kenya	• Primary data	• Ordinal	• Risk disclosure • Compliance checks • Enhanced accountability	Likert Scale of 1 - 5 5=strongly agree 4 =agree 3=not sure 2= disagree 1=strongly disagree	Obonyo (2017) and Gitonga (2019)	Stakeholder theory

Source: Researcher, 2021

CHAPTER THREE

3 RESEARCH METHODOLOGY

3.1 Introduction

This chapter details the research methodology that was adopted to achieve the purpose of the study which is to investigate the effect of ERM on fraud occurrence in independent regulatory agencies in Kenya. The methodology includes a research philosophy, research design, sampling design, data collection procedures, and data analysis and interpretation techniques that were adopted.

3.2 Research Philosophy

A research philosophy denotes the guiding principle that pilots the way a researcher should conceive a research problem, select a particular research design, and how data should be obtained, analyzed, and used to represent a certain reality (Stoliarova, 2017). There exist three primary research philosophies used in social science research studies, they include positivism, interpretivism, and pragmatism (Irshaidat, 2019). Positivists contend that the truth exists as an external reality and it is completely autonomous from the researched elements and the researcher ("Human Capital and Economic Development Review of What was Studied and Where was Researched", 2016). Positivism is focused on testing hypotheses involving causal association through operationalizing variables and using quantitative approaches involving structured questionnaires with predefined and pretested questions on a large sample to collect data, statistically analyze it for generalization, and to test the problematized causal relationships (Valeri & Coull, 2016). This is the most appropriate philosophy for this study since it sought to establish the causal association between enterprise risk management practices and fraud occurrence in regulated state organs. Further, compared with the other research philosophies, Interpretivism, and pragmatism, positivism guarantees anonymity of the respondents which was key in our collection of data and getting responses.

The study operationalized the appropriate variables and developed structured questions quantified on a Likert scale for statistical analysis. Data was collected from the sample respondents for analysis and the results were generalized to test the hypothesized relationship between the variables and inferences were made representing the objective knowledge of the studied phenomena. Similar research investigations (King'ori, Kiragu & Kamau, 2019, and Waigumo, 2012) employed this particular research philosophy to test the relationship between fraud risk management practices and fraud occurrence in different organizations and sectors.

3.3 Research Design

The study used an explanatory research design to achieve its objective of analyzing the effect of ERM on fraud in Kenya's independent regulatory agencies. An explanatory research design is a method developed to investigate a phenomenon that had not been studied before or had not been well explained previously in a proper way. Its main intention is to provide details about where to find a small amount of information. (Creswell, 2003; Tashakkori & Teddlie, 2003). Explanatory research is responsible for finding the why of the events by establishing cause-effect relationships. Its results and conclusions constitute the deepest level of knowledge, according to (Arias, 2012). In this sense, explanatory studies can deal with the determination of causes (post-facto research) and effects (experimental research) through hypothesis testing.

The study operationalized the variables and used a semi-structured questionnaire with question items on Likert scales to obtain quantitative data from the respondents. The data was then analyzed using descriptive and regression analysis to determine the relationship between the dependent and independent variables in independent regulatory agencies.

3.4 Population of the Study

Creswell (2014) defined a population as a well-defined collection of individuals and objects that have similar characteristics that form the focus of a study. On the other hand, Mugenda and Mugenda (2003) explained the target population as that which a researcher wants to generalize the results of a study. According to a 2013 report by the Presidential Taskforce on Parastatal Reforms, there are 25 independent Regulatory Corporations in Kenya (see Appendix III). The population of this research was hence made up of twenty-five (25) independent regulatory agencies in Kenya.

The unit of analysis for this study comprised twenty-five (25) independent regulatory agencies. The unit of observation was Chief Risk Officers, Heads of Internal audit, Chief Finance managers, an accounting officer, and a risk champion of the independent regulatory agencies. Consequently, this represented a total of 3 employees in senior management and 2 in support staff in each state organ; therefore, the total target population for this study was 125 employees of independent regulatory agencies.

The target population for the study comprised both senior managers and officers in the regulatory agencies. The senior managers have adequate knowledge of the internal controls and the general enterprise risk management aspects of the institutions they work in. However, to enhance objectivity, the study also targeted officers in the regulatory agencies as these are charged with the responsibility of the actual implementation of the framework.

Table 3-1: Population Size

Population Type	Total Number	Percentage
Chief Risk Officers	25	20
Heads of Internal Audit	25	20
Chief Finance managers	25	20
Accounting Officers	25	20
Risk champions	25	20
Total	**125**	**100**

Source: Researcher, 2022

3.5 Sample Size and Sampling Design

A sampling design is a definitive plan for obtaining a sample from a given population. It refers to the procedure the researcher would adopt in selecting items for the sample. A sampling frame describes the list of all population units from which the sample was collected (Creswell & Creswell, 2017).

Due to the uniqueness of each independent regulatory agency and the distinct roles played by each top management team member in their organization, the study adopted a census survey of all the top management team members in all twenty-five state regulatory agencies to capture the required information. According to Saunders, M., Lewis, P., and

Thornhill, A. (2007), a census is the collection and analysis of data from every possible case or group member in a population. The practicalities and cost of undertaking a census, representativeness, and the nature of the survey as well as the population was put into consideration when choosing census as a sampling design. Purposive sampling was used to select the different employees of the regulatory agencies that are critical in implementing ERM and managing fraud, hence key to this study i.e. Chief Risk Officers, Heads of Internal Audit, Chief Finance managers, an Accounting Officer, and a risk champion to draw randomly a predetermined number of units

3.6 Data Sources and Collection Instruments

As the primary instrument for data collection, the study used a semi-structured questionnaire with closed and open-ended questions (See Appendix II). The questionnaire was developed in line with the objectives and study research questions and guided by the literature review as well as theories underpinning the various study variables. Researchers utilize semi-structured questionnaires to acquire new, explanatory data relating to the study subject, triangulate other data sources, or confirm findings by member verification, according to DeJonckheere & Vaughn (2019). Semi-structured questionnaires are an effective method for data collection when the researcher wants: to collect quantitative, open-ended data; to explore participant thoughts, feelings, and beliefs about a particular topic; and delve deeply into sensitive issues, (DeJonckheere & Vaughn, 2019). Closed-ended questions allow the researcher to obtain quantitative information, whereas open-ended questions allow the researcher to acquire qualitative information.

The questionnaire was divided into six sections to obtain information covering various aspects of the study. Section A covered the demographic characteristics of the respondents. Section B covered questions on how the risk management process affects fraud occurrence within an organization; Section C covered questions on how risk governance affects fraud occurrence within an organization; section D covered questions on how risk aggregation affects fraud occurrence within an organization and Section E covered questions on Mwongozo code of governance which is our moderating variable and Section F covered questions on fraud occurrence within an organization. A 5-point

Likert scale was used to measure variables in sections B through D and F. Open-ended questions were used to substantiate responses in respective sections.

Given the restrictions imposed as a result of the Covid 19 pandemic where most employees are working from home, where necessary, the questionnaires were sent to the respondents via email. Adequate follow-up was made where necessary to ensure responses were received.

3.7 Data Analysis and Presentation

Before processing the responses, the collected data was prepared for statistical analysis. Validation and checking were done after the questionnaires were received from the field. Responses were checked for clarity, legibility, relevance, and appropriateness. Moreover, the questionnaires were edited for completeness and consistency. Coding was done based on the locale of the respondents. Quantitative data was analyzed using descriptive and inferential statistics. Descriptive statistics were used to summarize the survey data and included percentages, frequencies, means, and standard deviations. However, inferential statistics involved regression analysis and drawing conclusions.

Kaiser-Meyer-Olkin measure (KMO) and Bartlett's Test of Sphericity tests were performed to establish the sampling adequacy of the research data. KMO measure varies between 0 and 1, and values closer to 1 are better with a threshold of 0.5. Williams, Brown, and Onsman (2012), stated that a KMO of 0.50 is an acceptable degree of sampling adequacy. Bartlett's Test of Sphericity tests the null hypothesis that the correlation matrix is an identity matrix; that is, it analyzes if the samples are from populations with equal variances.

To establish the most influential factors for assessing each study variable for regression analysis, Factor analysis was performed. Factors with eigenvalues more than 1 and items with loadings more than 0.4 were reserved for further analysis (Mwangi & Ndegwa, 2020). To establish the effect of the independent variables on the dependent variable (y) among independent regulatory agencies in Kenya in the presence of control variables, a logit regression model was used as defined by the following equation.

The dependent variable was transformed into two categories; Scores above 3 were coded as agree (Value =1) and below 4 was considered disagree. 1 - 3 implies low fraud occurrence while 4 and 5 imply high fraud occurrence.

Logistic Model:

Logit {P(y=1)} $= \ln\left(\frac{p}{1-p}\right) =$ β_{0+} β_1 *Risk identification & assessment + β_{2*}Risk mitigation + β_{3*}Risk evaluation + β_4*Capacity & Proficiency +β_5* Governance structures + β_6* Risk Monitoring + β_7*Risk Targets +ε

Where $MFS, AM, Corruption = y = \begin{cases} 1 = Agree \\ 0 = Disagree \end{cases}$

Where p is the probability of the event occurring e.g. occurrence of misstatement of financial statements.
1-p is the probability of low fraud occurrence.

To measure the effectiveness of the Mwongozo code as a moderator, the analysis was undertaken in two steps where the first step involved testing the influence of the Risk management process, Risk Governance, Risk Aggregation, and mwongozo code on Fraud occurrence. The second step involved the introduction of the interaction term through stepwise regression analysis. The models are presented using the equations below.

Misstatement of financial statements (MFS)

Model 1: MFS = $\beta_0 + \beta_2$RMP + β_3RG + β_4RA + β_5MC+ ε

Model 2: MFS = $\beta_0 + \beta_2$RMP + β_3RG + β_4RA + β_5MC+β_6RMP*MC + β_7RG*MC + β_8RA*MC + ε

Dependent variable; Asset misappropriation (AR)

Model 3: AR = $\beta_0 + \beta_2$RMP + β_3RG + β_4RA + β_5MC+ ε

Model 4: $AR = \beta_0 + \beta_2RMP + \beta_3RG + \beta_4RA + \beta_5MC+\beta_6RMP*MC + \beta_7RG*MC + \beta_8RA*MC + \varepsilon$

Dependent variable; Corruption

Model 5: $Corruption = \beta_0 + \beta_2RMP + \beta_3RG + \beta_4RA + \beta_5MC+ \varepsilon$

Model 6: $Corruption = \beta_0 + \beta_2RMP + \beta_3RG + \beta_4RA + \beta_5MC+\beta_6RMP*MC + \beta_7RG*MC + \beta_8RA*MC + \varepsilon$

Where Y is the dependent variable (fraud occurrences), β_0 is the regression constant, β_1, β_2, β_3, and β_4 are the coefficients of independent variables, X_1 is risk management process (RMP), X_2 is risk governance (RG), X_3 is risk aggregation (RA), and X_4 is Mwongozo code (MC). B_6, β_7, and β_8 are the coefficients of the interaction terms. For moderating effect to be significant the two steps have to be significant including the interaction term.

After analysis and interpretation of data, a final report was presented summarizing the findings and conclusions as well as the research recommendations.

The inferential analysis examined the relationship between ERM and fraud occurrences through the use of multivariate analysis. The research hypotheses were also tested at a 95% level of confidence as a statistical basis for making inferences and drawing conclusions. The responses for each research variable were combined using SPSS V24 to generate composite scores which were used in the multivariate analysis. Analysis of variance was used to test whether the overall models were statistically significant by indicating whether or not R^2 could have occurred by chance alone. The F-ratio generated was utilized to measure the probability of chance departure from a straight line. The p-value of the F-ratio generated should be less than 0.05 for the equation to be statistically significant at a 95% confidence level. In case the p-value is greater than 0.05, the model is not statistically significant. For the individual variables, the p values of the coefficients generated in the regression analysis would have to be less than .05 for their relationship to be concluded significant at a 95% confidence level.

Results of quantitative data analysis were presented using figures and tables for easy understanding and interpretation as recommended by Mash and Ogunbanjo (2014). Qualitative data from open-ended questions were analyzed based on common themes and presented in a narrative form.

3.8 Validity and Reliability of Research Instrument

3.8.1 Pilot Study

To appraise the research instruments, a pilot study was conducted. The goal of the pilot research was to mitigate the possibility of failure by developing a tool that can fully evaluate the effects of ERM on fraud occurrence in independent regulatory agencies in Kenya. The pilot test also aided in determining the questionnaire's face and content validity, as well as obtaining feedback from professionals and experts in the subject of investigation, as proposed by Mugenda & Mugenda (2003).

A total of fifteen respondents participated in the pilot research and were selected at random from the target population. The respondents who took part in the pilot study were not included in the sample for the final study. The information gathered was coded and analyzed. The findings of the pilot study aided the researcher in revising the instruments and improving the research design.

Through a literature study and expert comments, the dimensions for the independent variable (ERM) of the risk management process, risk governance, and risk aggregation were affirmed as appropriate. The dependent variable and moderating variable were selected and designed based on the literature research, and all dimensions essential for fraud occurrence as well as the Mwongozo code were integrated. Expert opinion and a rigorous alignment of the research instrument with the examined literature aided the research's essential revision and adjustment intending to improve face and content validity.

3.8.2 Validity of Research Instruments

The amount to which a concept is accurately measured is defined as validity (Heale, 2015). Validity relates to whether the research question is valid for the desired outcome, whether the methodology chosen is appropriate for answering the research question, whether the design is appropriate for the methodology, whether the sampling and data analysis is appropriate, and whether the results and conclusions are appropriate for the sample and context (Leung, 2015). A pilot study was carried out involving fifteen respondents selected from the target population. The respondents involved in the pilot test were excluded from the sample selected for the final research. The purpose of the pilot research was to establish the face and content validity of the questionnaire alongside the opinion sought from professionals and experts in the field of investigation as recommended by Mugenda and Mugenda (2003).

The dimensions for the independent variable (ERM) comprising the risk management process, risk aggregation, and risk governance were verified as appropriate through literature review and expert suggestions. The choice and development of the dependent variable and moderating variable were based on the literature review and all dimensions necessary for fraud occurrence and mwongozo code were included. Expert suggestions and a careful alignment of the research instrument based on the reviewed literature facilitated the necessary revision and modification of the research to enhance the face and content validity. Factor analysis was used to establish construct validity for all of the variables employed in this study (Kerlinger & Lee, 2000). All of the items in the variables were subjected to factor analysis and loaded following prior theoretical expectations. The results of the data analysis revealed satisfactory outputs for dependent, independent, and moderating variables.

3.8.3 Reliability of Research Instruments

The degree to which a questionnaire tests observations or other measurement method generates consistent results is referred to as reliability. The consistency of a measure or the extent to which a research instrument consistently produces the same results when employed in the same context on multiple occasions is referred to as reliability (Heale, 2015). Cronbach's Alpha was used to evaluate the research instrument's internal consistency. Cronbach's scores ranged from 0.712 to 0.951 hence were considered reliable.

3.9 Ethical Issues

The researcher ensured the integrity of the results by striving to be objective in analyzing data, interpreting results, reviewing, decisions, and all other aspects of the research where objectivity is required. Using the APA referencing system, the researcher properly acknowledges all books, journals, papers, and other reference materials from individual authors and institutions that were utilized in the research process.

All information was kept completely confidential, and respondents' identities were preserved through the use of codes. Respondents were informed of the study's aim and methodology, and participation was entirely voluntary. Before sending the questionnaire, verbal consent was obtained by calling or visiting the institution and informing them of the research. The researcher got permission to collect data from the proper authorities before beginning data collection. To begin, the researcher got a document from the institution authorizing me to conduct research for my Master's degree program. The research also adhered to guidelines set forth by the Strathmore University Ethics Review Board. A research license from the national commission for science, technology, and innovation was also obtained.

CHAPTER FOUR

4 RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents the data analysis and findings of the study as set out in the research objective and research methodology. The section is organized into two parts. Section A: response rate, descriptive statistics, and factor analysis for extraction of factors for regression. Part B: Describes how the objectives of this research were achieved. Section B presents the correlation matrix, Regression models for Fraud Occurrence which have three components; Misstatement of financial reports, Asset misappropriation, and Corruption which helped to answer the research questions.

4.2 Analysis of the Response Rate

The researcher distributed 125 questionnaires to the sampled respondents, who included Chief Risk Officers, Heads of Internal Audit, Chief Finance managers; Accounting Officers, and Risk champions in Independent Regulatory state corporations; out of which 88 were filled in and returned. This represented an overall successful response rate of 70.4%. According to Smith et al., (2019), and Wimmer & Dominick (2006), a response rate of 21% – 70% is acceptable for self-administered questionnaires as it guarantees accuracy and minimizes bias. Mailu et al., (2021), further argue that for those studies carried out at the organizational level, the appropriate response rate is between 35 – 40%. According to Mugenda and Mugenda (2003), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. Based on the assertion, the response rate was considered too excellent for analysis and to make meaningful conclusions. Therefore, the above response rate met this criterion hence it was appropriate for this study. The analysis of the response rate is presented below;

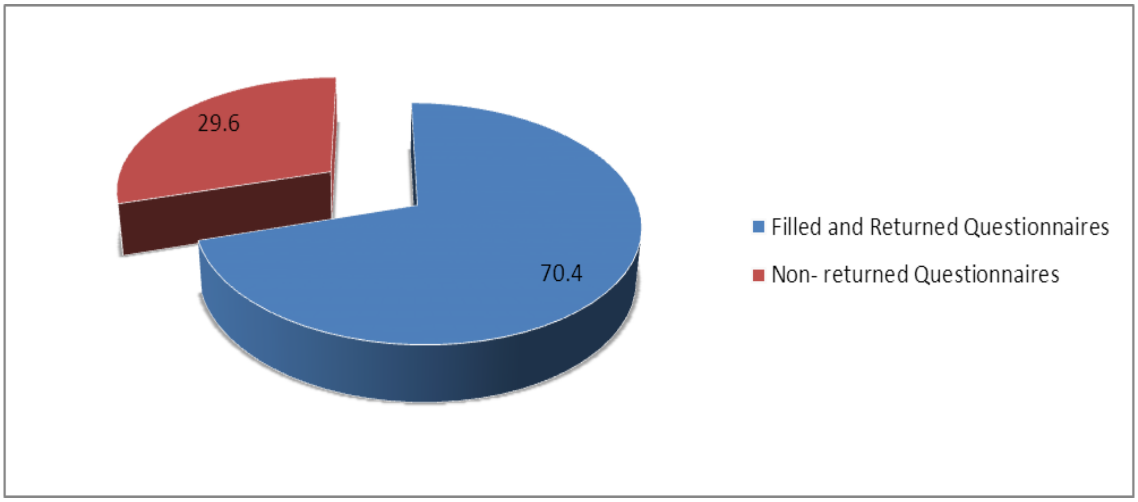

Figure 4-1: Response Rate

4.2.1 Respondents' Biographical Information

The characteristics of the respondents involved in the study were also analyzed based on sex, tenure of service, and designation. The analysis of respondents' biographical data is presented in Table 4-1.

Table 4-1: Analysis of Biographical Information

Category	Sub-Category	Frequency	Percent
Sex	Male	67	76.14
	Female	21	23.86
	Total	**88**	**100**
Tenure	At most 3 years	9	10.23
	4-7 years	10	11.36
	8 – 11 years	53	60.23
	12 years and above	16	18.18
	Total	**88**	**100**
Position	Chief Risk Officers	17	19.31
	Heads of Internal Audit	12	13.65

Chief Finance managers	19	21.59
Accounting Officers	17	19.31
Risk champions	23	26.14
Total	**88**	**100**

Source: Researcher, 2022

The findings in Table 4-1 show the demographic profiles of the respondents and summary statistics of their distribution across these characteristics. The respondents were not equitably distributed across genders, as seen in Table 4-1. There were marginally more male responses than female respondents, with 76.24 percent males and 23.86 percent females. This is in line with the reality that there are generally more men in employment than women, and it also demonstrates a fair balance in which neither gender has occupied all positions. This is in accordance with the constitution, which mandates that at least one-third of public-sector employees be female. The gender distribution is unlikely to affect the data's statistical power.

Those who had served for 8 to 11 years made up the majority of the respondents, accounting for 60.23 percent. The respondents who had served for less than three years made up the smallest category, accounting for 10.23 percent of the population. The rest of the respondents, 11.36 percent and 18.18 percent, respectively, had served for 4 to 7 years and at least 12 years. This is in line with public sector career advancement standards, which place a premium on experience and years of service. Organizations can use the tenure structure to plan for succession so that younger employees can take over from their elder colleagues. This implies that the study's participants had the necessary experience in risk management and fraud occurrence and were in a position to provide reliable information about the research variables.

Moreover, the majority of the respondents 26.14% were Risk champions with the Head of Internal audit comprising the smallest group at 13.65%. Of the rest of the respondents, 19.31% were Chief Risk Officers and Accounting officers, whereas 21.59% were Chief Finance managers. The analysis confirms that the target functional areas were fairly represented in the study. This is in line with the government's non-interference policy, which is famed for its employment security. A large number of respondents with sufficient expertise suggests that the findings are adequate for understanding the effect of ERM on fraud occurrence in independent regulatory agencies.

4.3 Reliability and Validity Tests

Cronbach's Alpha was used to evaluate the research instrument's internal consistency. Cronbach's Alpha is a reliability coefficient that demonstrates how positively correlated the variables are (Sekaran, 2003). On predictor tests or postulated construct measurements, it has been suggested that a reliability level of 0.70 is adequate (Ehlers, 2000). Indeed, it is suggested that a minimum of 0.70 be used for explanatory work and a standard of 0.90 be used for advanced practice. Cooper and Schindler (2003), on the other hand, suggest that a Cronbach's alpha value of more than 0.50 indicates reliability. Muraga (2015), employed a similar criterion. In this study, 0.50 was used to indicate the research instruments' reliability. Results presented in Table 4-2 indicate that all the variables attained the acceptable and recommended level of alpha 0.50.

Table 4-2: Test of Reliability of the Research Instrument

Constructs	Cronbach's Alpha Score	No of the Questionnaire items	Comment
Risk management process	0.863	12	Reliable
Risk Governance	0.770	8	Reliable
Risk Aggregation	0.712	6	Reliable
Mwongozo code	0.928	9	Reliable
Misstatement of financial reports	0.847	6	Reliable
Asset misappropriation	0.861	6	Reliable
Corruption	0.951	6	Reliable

Source: Researcher, 2022

4.4 Descriptive Analysis

In this section, the descriptive statistics for the study variables namely enterprise risk management, fraud occurrences, and the Mwongozo code of conduct are reported. To establish the effect of ERM on fraud occurrence in independent regulatory agencies in Kenya, descriptive statistical analysis was employed to establish the perceived level of enterprise risk management practices. Descriptive statistics comprising mean and standard deviation were employed to assess the perceived effectiveness of the ERM practices. A 5-point Likert scale ("Strongly disagree" = 1; "Disagree" = 2; "Neutral" = 3; "Agree" = 4; "Strongly agree" = 5) was used in assessing the level of the perceived effects of ERM on fraud occurrence. The descriptive statistics summarize the main characteristics of the study variables.

4.4.1 Risk Management Process

The risk management process was measured using indicators comprising risk identification, risk assessment, and risk mitigation. Respondents were asked to rate the variables on a scale of 1 to 5; where 5 represents "Strongly Agree" and 1 represents "Strongly Disagree". The descriptive statistics for each of these indicators are presented and discussed in Table 4-3.

Table 4-3: Descriptive Statistics for Risk Management Process

Descriptive Statistics: Risk Management Process					
	N	Mean	Median	Mode	Std. Deviation
Risk identification is vital for effective risk management in your organization	88	4.10	4.00	4.00	0.48
Risk identification is positively significant to influence risk management practices in your agency	88	4.10	4.00	4.00	0.63
Risk identification informs the ranking of risks according to their significance	88	4.17	4.00	4.00	0.72

Risk identification assists the management to develop a risk management strategy to allocate resources efficiently	88	4.08	4.00	4.00	0.61
Risks are evaluated with assumptions and uncertainties being considered and presented.	88	4.15	4.00	4.00	0.62
The risk assessment matrix is vital for effective risk management in your agency	88	3.95	4.00	4.00	0.57
Risk is evaluated in terms of both quantitative and qualitative value.	88	4.00	4.00	4.00	0.50
Your organization undertakes risks and vulnerability analysis.	88	3.88	4.00	4.00	0.62
Your organization transfers risks to other parties such as insurance.	88	4.27	4.00	4.00	0.62
Your organization avoids risk by having standard procedures.	88	3.73	4.00	4.00	0.62
Your organization reduces risks by creating provisions for contingencies.	88	3.88	4.00	4.00	0.54
Controls exist for approving decisions regarding financing alternatives and accounting principles, practices, and methods.	88	3.91	4.00	4.00	0.54
Valid N (listwise)	88	4.02	4.00	4.00	0.59

Source: Researcher, 2022

Table 4-3 above shows that the aggregate mean score for risk identification is 4.02. This mean score approximates 4.00 (agree) on the 5-point Likert scale adopted for the study.

Furthermore, as indicated by the aggregate standard deviation of 0.59, there was little variation in responses from the mean response. The high number of actions related to the risk management process in independent regulatory agencies is revealed by this aggregate mean score. Furthermore, the low aggregate standard deviation indicates that answers are clustered around the aggregate mean, making the estimator of the real mean stable and dependable. The low deviation from the total mean response in this example demonstrates that the respondents believed that the risk management process plays a critical role in mitigating fraud.

4.4.2 Risk Governance

Risk governance was investigated using activities undertaken in independent regulatory agencies involving standards and policies, the presence of a risk management committee, capacity and proficiency, and periodic review. Respondents were asked to rate the variables on a scale of 1 to 5; where 5 represents "Strongly Agree" and 1 represents "Strongly Disagree". The descriptive statistics from responses on risk governance are presented in Table 4-4.

Table 4-4: Descriptive Statistics for Risk Governance

	N	Mean	Median	Mode	Std. Deviation
The agency has a well-defined risk governance policy.	88	4.35	4.00	4.00	0.60
The risk governance policy clearly outlines the Disclosure practices and whistleblowing practices within the agency.	88	3.83	4.00	4.00	0.698
The agency board of directors has the requisite expertise to manage risks.	88	3.15	3.00	3.00	0.85
The board of directors understands its role concerning the agency's risk management.	88	3.17	3.00	3.00	0.68

The board of directors has established a risk committee within the larger board.	88	3.88	4.00	4.00	0.56
The agency has a qualified officer in charge of risk management.	88	3.53	4.00	4.00	0.66
The Risk Officer is capacitated and empowered to perform his duties effectively.	88	3.30	3.00	3.00	0.73
The board periodically arranges for external assessments of the risk management framework.	88	3.34	3.00	4.00	0.74
Valid N (listwise)	88	3.57	3.50	3.62	0.69

Source: Researcher, 2022

The standard deviation is 0.69, and the overall average score for risk governance is 3.57. The average mean score of 3.57 tends to 4 (agree) which implies that the majority of participants agreed that risk governance systems were in place at their organizations. The low aggregate standard deviation of 0.69 demonstrates that the responses are generally concentrated around the mean response. Furthermore, the aggregate mean score is a steady and accurate estimator due to the minimal diversity of responses. In this case, the respondents agree that risk governance is important in preventing fraud.

The respondents generally agreed that independent regulatory agencies have put in place a risk management governance policy as this had the highest mean of 4.35. However, the respondents did not fully agree that the Board of Directors has the requisite skills to manage risks as this had the lowest mean of 3.15. This can be attributed to the fact that Board members of the independent regulatory agencies are political appointees and may not have the required proficiency.

4.4.3 Risk Aggregation

The variable of risk aggregation was measured using indicators comprising risk culture, key risk indicators (KRI), and key performance indicators (KPI). Respondents were asked to rate the variables on a scale of 1 to 5; where 5 represents “Strongly Agree” and 1 represents “Strongly Disagree”. The descriptive statistics for risk aggregation are presented in Table 4-5.

Table 4-5: Descriptive Statistics for Risk Aggregation

	N	Mean	Median	Mode	Std. Deviation
The agency has in place a policy and guidelines for setting risk targets (risk appetite and tolerance) considering the various types of risks that modern corporations may be subject to.	88	3.99	4.00	4.00	0.54
The board of directors sets risk targets (risk appetite and tolerance) with regard to each risk identified at the agency.	88	3.81	4.00	4.00	0.60
The agency’s risk culture is inexorably linked to the organization’s culture.	88	2.95	3.00	2.00	0.95
The organization has identified key risk indicators	88	3.28	3.00	4.00	0.74
The key risk indicators have been properly assigned and are regularly monitored and reported	88	3.18	3.00	3.00	0.72
The key performance indicators are regularly	88	3.85			0.39

monitored and reported			4.00	4.00	
Valid N (listwise)	88	3.51	3.5	3.12	0.67

Source: Researcher, 2022

Table 4-5 shows that the aggregate mean score for items on risk aggregation is 3.51 and its corresponding standard deviation is 0.64. This overall mean score tends to 4.00 (agree) on the 5-point Likert scale adopted for the study and thus indicates that respondents generally agree that activities involving risk aggregation are practiced in independent regulatory agencies in Kenya. In addition, the responses are clustered around the mean response as illustrated by the low aggregate standard deviation. The low variability of responses reveals that the mean response is a reliable estimator for the true mean. The narrow variability from the overall mean response confirms that it is crucial in fraud prevention.

4.4.4 The Mwongozo Code

The variable on the Mwongozo Code was measured using eight broad themes, including appointment and functions of boards; transparency and disclosure; accountability, risk management, and internal control; ethical leadership and corporate citizenship; shareholder rights and obligations; stakeholder relationships; sustainability and performance management and compliance with laws and regulations. Respondents were asked to rate the variables on a scale of 1 to 5; where 5 represents “Strongly Agree” and 1 represents “Strongly Disagree”. The descriptive statistics for the Mwongozo code are presented in Table 4-6.

Table 4-6: Descriptive Statistics for the Mwongozo Code

	N	Mean	Median	Mode	Std. Deviation

The Mwongozo Corporate Governance Code aids in the deterrence of fraud at the agency.	88	3.42	4.00	4.00	0.81
The Mwongozo code has increased the transparency of the agency's operations and decision-making process.	88	3.16	3.00	3.00	0.90
The adoption of the Mwongozo code has increased the agency's accountability, resulting in improved performance.	88	3.06	3.00	3.00	0.90
The adoption of the Mwongozo code has considerably aided the agency's efforts to preserve ethics and principles.	88	3.23	3.00	3.0	0.78
The Mwongozo code has enhanced the reliability and precision of financial and operational data at the agency.	88	3.2	3.00	3.00	0.71
The Mwongozo code guarantees a power balance among the agency's diverse stakeholders.	88	3.39	3.00	4.00	0.76
The Mwongozo code ensures that the agency's rules, regulations, policies, procedures, and contracts are followed to minimize penalties and fines.	88	3.32	3.00	3.00	0.65
The Mwongozo code aids the deterrence of	88	3.27			0.78

unreasonable exposures of the company by the management.			3.00	4.00	
The Mwongozo code facilitates the identification, monitoring, and management of risks at the agency.	88	3.37	3.00	3.00	0.61
Valid N (listwise)	88	3.27	3.11	3.33	0.77

Source: Researcher, 2022

Table 4-6 shows that the overall mean score and standard deviation for items on the Mwongozo code are 3.27 and 0.77 respectively. The aggregate mean score approximates 3.00 (Neutral) on the 5-point Likert scale used in this research confirming that there is general agreement amongst respondents that the indicators for the Mwongozo code were effective in curbing fraud occurrences in Kenyan independent regulatory agencies. The respondents generally agreed that the Mwongozo aids in the deterrence of fraud at the regulatory agencies as this registered the highest mean of 3.42, and does guarantee a power balance among the agency's diverse stakeholders that registered the second highest mean of 3.39. From the qualitative data, respondents indicated that ERM was popular among independent regulatory bodies, and confirmed that risk identification was most popular with these institutions. The respondents also confirmed that ERM practiced among the independent regulatory bodies was in line with the Mwongozo code.

4.4.5 Fraud Occurrences

The variable on the fraud occurrence was measured using indicators comprising asset misappropriation, corruption, and financial statement fraud. Respondents were asked to rate the variables on a scale of 1 to 5; where 5 represents “Strongly Agree” and 1 represents “Strongly Disagree”. The descriptive statistics for fraud occurrence are presented in Table 4-7.

4.4.5.1 Misstatement of financial reports

Table 4-7: Descriptive Statistics for Misstatement of financial reports

	N	Mean	Median	Mode	Std.

					Deviation
Missing of disclosure	88	1.82	2.00	2.00	0.60
Inappropriate revaluation amount of fixed assets	88	1.62	2.00	2.00	0.62
Overstating revenue	88	2.10	2.00	2.00	0.81
Overstating expenses	88	2.15	2.00	2.00	0.82
Concealed liabilities	88	1.58	1.00	1.00	0.66
Timing difference by not observing the cut-off period	88	2.34	2.00	2.00	1.01
Valid N (listwise)	88	1.94	1.83	1.83	0.75

Source: Researcher, 2022

Table 4-7 above shows that the overall mean score and standard deviation for types of frauds on misstatement of financial statements are 1.94 and 0.75 respectively. The aggregate mean score approximates 2.00 (Disagree) on the 5-point Likert scale used in this research confirming that there is disagreement amongst respondents that misstatement of financial statements occurs in Kenyan independent regulatory agencies. Lack of adherence to the cut-off period recorded the highest mean at 2.34. This is in line with the fraud diamond theory that posits that fraud mostly financial statement fraud is committed by professionals who understand the process and can easily conceal fraud.

4.4.5.2 Asset misappropriation

Table 4-8: Descriptive Statistics for Asset misappropriation

	N	Mean	Median	Mode	Std. Deviation
Cash and inventory larceny	88	2.25	2.00	2	0.94

Misuse of company assets	88	2.29	2.00	2	0.98
Theft of petty cash and cash receipts	88	2.16	2.00	2	0.87
Payroll schemes	88	1.88	2.00	2	0.68
Fictitious claims for expenses	88	2.24	2.00	2	0.90
Cheque tampering	88	1.39	1.00	1	0.74
Valid N (listwise)	88	2.04	1.83	1.83	0.85

Source: Researcher, 2022

Table 4-8 above shows the mean and standard deviation of asset misappropriation which recorded a means score of 2.04 and a standard deviation of 0.85. All the types of fraud on asset misappropriation concentrated around 2 (disagreed) except cheque tampering which recorded the lowest mean score of 1.39 and a standard deviation of 0.737 and payroll schemes which recorded a mean of 1.88 and a standard deviation of 0.676. The low cases of cheque tampering could be attributed to the fact that most independent regulatory agencies no longer transact using cheques but instead use mobile and online payments. This could also be attributed to the various controls that have been put in place by the Central Bank of Kenya to curb cheque fraud. Misuse of company assets and cash and inventory larceny recorded the highest mean scores at 2.29 and 2.25 respectively. This is in line with the observations of Mwangi & Ndegwa (2020) who noted high incidents of cash and inventory larceny in listed companies in Kenya.

4.4.5.3 Corruption

Table 4-9: Descriptive Statistics for Corruption

	N	Mean	Median	Mode	Std. Deviation
Employees taking bribes in exchange for providing public services	88	2.75	3.00	3	0.85
Purchasing scheme involving favoring a	88				0.98

supplier related to an employee who had a financial interest in the purchasing transactions.		2.68	2.00	2.00	
Employee assisting to secure a payment involving an inflated invoice.	88	2.52	2.00	2.00	0.83
Employees taking bribes to influence the award of lucrative deals	88	2.64	2.00	2.00	0.92
Misuse of business time	88	2.72	2.00	2.00	0.96
Abuse of power to override controls	88	2.60	2.00	2.00	0.90
Valid N (listwise)	88	2.65	2.17	2.17	0.91

Source: Researcher, 2022

Table 4-9 above shows that the overall mean score and standard deviation for corruption were 2.65 and 0.91 respectively. The average mean score approximates 3 (neutral) indicating that respondents generally agreed that corruption normally takes place in independent regulatory agencies. Further, corruption recorded the highest mean compared to the other two types of fraud; asset misappropriation and financial statement fraud. Respondents indicated that employees of independent regulatory institutions generally take up bribes in exchange for the provision of public service as this recorded the highest mean of 2.75. Misuse of business time recorded the second highest at 2.72 indicating a relatively bad culture of employees using official time to undertake personal business.

4.5 Exploratory Factor analysis

The main variables in this research namely Misstatement of financial reports, Asset misappropriation, Corruption, risk management process, Risk Governance, Risk Aggregation & Mwongozo code were subjected to factor analysis. Factor analysis is a data reduction technique that is carried out using a correlation matrix of variables of interest. A set of variables are combined with a new smaller set of variables called factors. This factor represents a weighted mean of the original data which are latent variables i.e variables that cannot be observed. Factor analysis which uses principal component analysis and varimax rotation was used to extract factors subject to Kaiser-Meyer-Olkin (KMO), Bartilett's tests, and an eigenvalue cut-off of 1.0.

4.5.1 Test of Sampling Adequacy

4.5.1.1 Kaiser-Meyer-Olkin (KMO)

Kaiser-Meyer-Olkin (KMO) index, a measure of sampling adequacy, was used to determine whether factor analysis should be appropriate to yield distinct and reliable factors or determine important latent variables, (Mistima, Zakaria, Nordin, & Meerah, 2011). Factor analysis is considered acceptable for data given that the figure of the KMO test is greater than 0.5. However, values greater than KMO values greater than 0.6 are preferred. Values closer to one indicate that there is a strong correlation between variables hence they can be used to generate factors or constructs variable (Williams, Onsman & Brown, 2010). Table 4-10 below presents the coefficients of KMO of the variables.

Table 4-10: Adequacy of Sampling size – KMO statistic and Bartlett's test

KMO and Bartlett's Test

Constructs	**KMO**	**Approx. Chi-Square**	**df**	**Sig.**
Risk management process	0.834	400.719	66	0.000
Risk governance	0.712	174.311	28	0.000
Risk aggregation	0.603	154.482	15	0.000
Mwongozo code	0.886	441.938	36	0.000
Misstatement of financial reports	0.758	302.239	15	0.000
Asset misappropriation	0.835	328.116	15	0.000
Corruption	0.879	540.775	15	0.000

Source: Researcher, 2022

Table 4-10 shows the coefficient of KMO is greater than 0.5 for all the variables, hence the sample was adequate to proceed with factor analysis.

4.5.1.2 Bartlett's test of sphericity

To test whether the questions in the questionnaire are related or measure the same construct for each variable, Bartlet's test of sphericity was performed. The intention is to combine the questions into new clustered variables (constructs). Bartlett's test of sphericity is the test for the null hypothesis that the correlation matrix has an identity matrix. The interest was to determine the relationship between variables to reject the null hypothesis and conclude that the correlation matrix is not an identity matrix (Maat, Zakaria, Nordin, & Meerah, 2011). In table 4.10 above, the p-values (Sig.) were all 0.000. Taking a 95% level of significance, the p-value should be less than 0.05. Hence, the null hypotheses were rejected, and it was concluded that Bartlett's test of sphericity was highly significant, and the variables were correlated. Therefore, it was appropriate to carry out factor analysis. Explorative factor analysis was carried out and the research findings have been discussed below for each variable.

4.5.2 Factors extraction

4.5.2.1 Derivation of factors of the Risk Management Process

The principal component analysis was used to identify variables that account for more variability and extract new factors based on the total variance explained as shown in Table 4-11 below.

Table 4-11: Total Variance explained by factors of the risk management process

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.619	38.494	38.494	2.882	24.021	24.021
2	1.989	16.573	55.067	2.624	21.866	45.887
3	1.003	8.358	63.425	2.105	17.539	63.425

4	0.847	7.055	70.480			
5	0.690	5.749	76.229			
6	0.598	4.984	81.213			
7	0.526	4.382	85.595			
8	0.442	3.687	89.283			
9	0.388	3.234	92.517			
10	0.349	2.908	95.425			
11	0.290	2.413	97.837			
12	0.260	2.163	100.000			
Extraction Method: Principal Component Analysis.						

Source: Researcher, 2022

Principal Components Analysis revealed that three main components are driving the Risk Management factor which is in line with the minimum eigenvalue value of 1.0 for analysis (Yong & Pearce, 2013). An inspection of the scree plot as shown in Figure 4-2 revealed a clear break after the third component (Cattell, 1966).

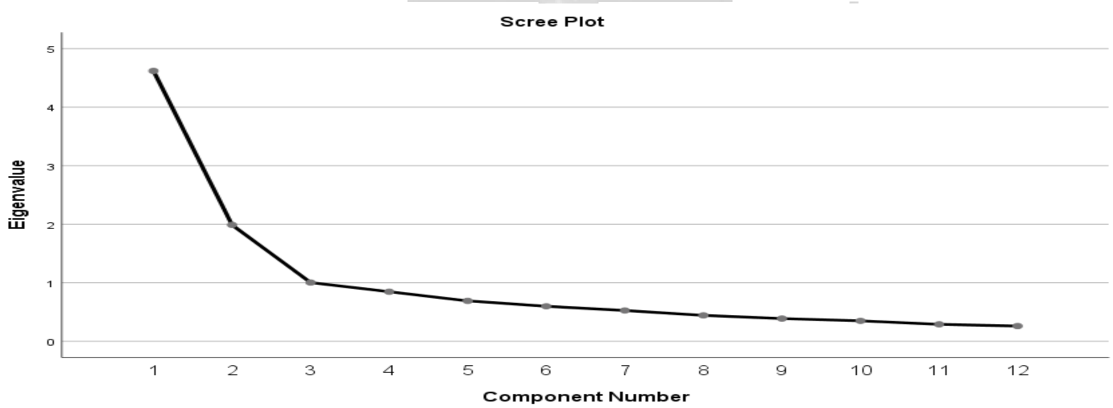

Figure 4-2: Scree Plot depicting the association between Eigenvalues and factors for the risk management process
Source: Researcher, 2022

The three-component solution explained a total of 63.42% of the variance, with Component 1 contributing 38.4%, component 2 contributing 16.57%, and Component 3 contributing 8.35%. To aid in the interpretation of these three components, varimax rotation was performed. The rotated solution revealed the presence of a simple structure, with this component showing a number of strong loadings and all variables loading substantially on the three components as shown in Table 4-12 below.

Table 4-12: Rotated Component Matrix for risk management process

	Components		
	1	2	3
Your organization transfers risks to other parties such as insurance.	**0.870**	0.194	
Risk assessment matrix is vital for effective risk management in your agency	**0.794**	-0.156	0.281
Risk identification is vital for effective risk management in your organization	**0.771**	0.106	0.254
Risk identification is positively significant to influence risk management practices in your agency	**0.634**	0.247	0.353
Your organization avoids risk by having standard procedures.		**0.858**	
Your organization reduces risks by creating provisions for contingencies.		**0.745**	
Risks are evaluated with assumptions and uncertainties being considered and presented.	0.375	**0.681**	0.257
Your organization undertakes risks and vulnerability analysis.	0.242	**0.629**	0.255
Controls exist for approving decisions regarding financing alternatives and accounting principles, practices, and methods.	0.124	**0.522**	0.456
Risk identification assists the management to develop a risk management strategy to allocate resources efficiently		0.159	**0.780**
Risk identification informs the ranking of risks according to their significance	0.436		**0.701**
Risk is evaluated in terms of both quantitative and qualitative value.	0.295	0.200	**0.628**
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

Using a minimum loading of 0.4, (Yong & Pearce, 2013), the study was able to identify the significant loading values under each component as shown in table 4.15 above. The following variables; transfer of risks to other parties such as insurance (0.870), risk assessment matrix is vital for effective risk management (0.794), risk identification is vital for effective risk management (0.771) and risk identification is positively significant to influence risk management practices (0.634) all loaded under component 1. Interpretation of the factor indicates that respondents could have understood variables under this factor to relate to risk identification and assessment. A review of the variables loaded under component 2 indicates elements of risk mitigation strategies. The variables under the component included; The organization avoids risk by having standard procedures (0.858), the organization reduces risks by creating provisions for contingencies (0.745), risks are evaluated with assumptions and uncertainties being considered and presented (0.681), the organization undertakes risks and vulnerability analysis (0.629), and controls exist for approving decisions regarding financing alternatives and accounting principles, practices, and methods (0.522). COSO (2004), identifies risk mitigation strategies as, risk reduction, risk avoidance, risk treatment, and sharing of risks. Component 3 on the other hand, comprised variables that could be interpreted as activities in relation to risk evaluation. The variables under this component included; Risk identification assists the management to develop a risk management strategy to allocate resources efficiently (0.780), Risk identification informs the ranking of risks according to their significance (0.701) and Risk is evaluated in terms of both quantitative and qualitative value (0.628).

4.5.2.2 Derivation of factors of Risk Governance

The principal component analysis was used to identify variables that account for more variability, and extract new factors based on the total variance explained as shown in Table 4-13 below.

Table 4-13: Total Variance Explained for Risk Governance

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Varianc	Cumulativ	Total	% of Varianc	Cumulativ

		e	e %		e	e %
1	2.819	35.239	35.239	2.574	32.175	32.175
2	1.748	21.855	57.094	1.994	24.919	57.094
3	0.960	12.004	69.097			
4	0.648	8.094	77.191			
5	0.553	6.909	84.101			
6	0.512	6.401	90.502			
7	0.418	5.220	95.722			
8	0.342	4.278	100.000			
Extraction Method: Principal Component Analysis.						

Source: Researcher, 2022

Principal Components Analysis revealed that two main components are driving the Risk Governance factor which is in line with the minimum eigenvalue value of 1.0 for analysis (Yong & Pearce, 2013). An inspection of the scree plot as shown in Figure 4-3 revealed a clear break after the second component (Cattell, 1966).

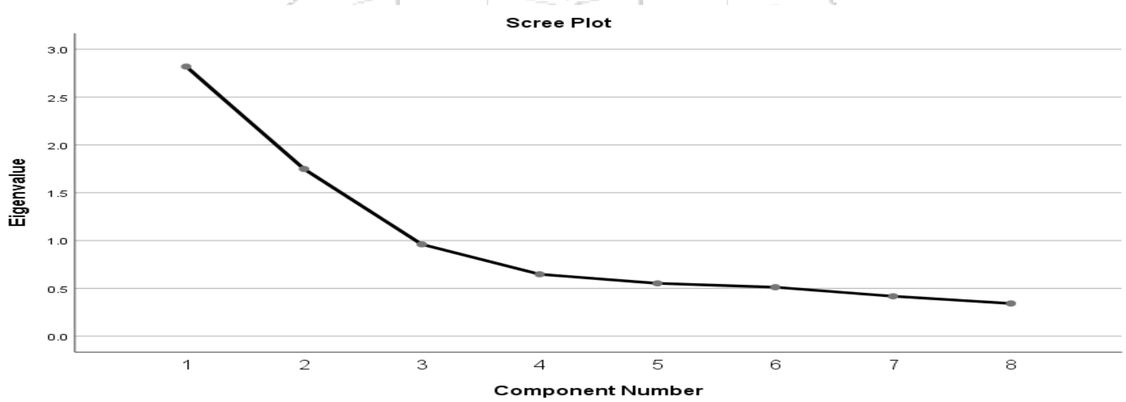

Figure 4-3: Scree Plot depicting the association between Eigenvalues and Risk Governance factors
Source: Researcher, 2022

The two-component solution explained a total of 57% of the variance, with Component 1 contributing 35.24% and component 2 contributing 21.86%. To aid in the interpretation of these two components, varimax rotation was performed. The rotated solution revealed the presence of a simple structure with this component showing a number of strong loadings and all variables loading substantially on the two components as shown in Table 4-14 below.

Table 4-14: Rotated Component Matrix for Risk Governance factors

	Component	
	1	2
The Risk Officer is capacitated and empowered to perform his duties effectively.	**0.769**	
The agency board of directors has the requisite expertise to manage risks.	**0.760**	
The board of directors understands its role in relation to the agency's risk management.	**0.730**	
The board periodically arranges for external assessments of the risk management framework.	**0.688**	
The agency has a qualified officer in charge of risk management.	**0.569**	0.403
The agency has a well-defined risk governance policy.		**0.829**
The board of directors has established a risk committee within the larger board.		**0.802**
The risk governance policy clearly outlines the Disclosure practices and whistleblowing practices within the agency.	0.257	**0.703**
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Table 4-14 above, shows that component 1 comprised of the following variables; the risk officer is capacitated and empowered to perform his duties effectively (0.769), the agency board of directors has the requisite expertise to manage risks (0.760), the board of directors understands its role in relation to the agency's risk management (0.730), the board periodically arranges for external assessments of the risk management framework (0.688), and the agency has a qualified officer in charge of risk management. The variables could have been understood to relate to the capacity and proficiency of the personnel charged with responsibilities for risk management. Component 2 on the hand comprised factors that could have been attributed to governance structures put in place in independent regulatory agencies. This included; The agency has a well-defined risk governance policy(0.829), The board of directors has established a risk committee within the larger board (0.802), and The risk governance policy clearly outlines the Disclosure practices and whistleblowing practices within the agency (0.703).

4.5.2.3 Derivation of factors of Risk Aggregation

The principal component analysis was used to identify variables that account for more variability and extract new factors based on the total variance explained as shown in Table 4-15 below.

Table 4-15: Total Variance Explained for Risk Aggregation factors

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.405	40.084	40.084	2.205	36.755	36.755
2	1.547	25.789	65.872	1.747	29.118	65.872
3	0.809	13.480	79.352			
4	0.559	9.315	88.667			
5	0.484	8.067	96.734			
6	0.196	3.266	100.000			
Extraction Method: Principal Component Analysis.						

Source: Researcher, 2022

Principal Components Analysis revealed that two main components are driving the Risk Aggregation factor which is in line with the minimum eigenvalue value of 1.0 for analysis (Yong & Pearce, 2013). Using Cattell, (1966) scree test revealed a clear break after the second component as shown in Figure 4-4 below.

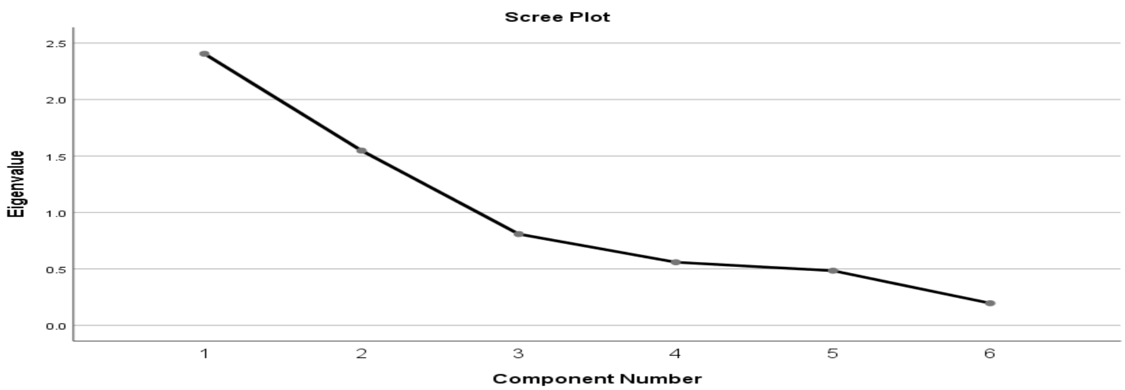

Figure 4-4: Scree Plot depicting the association between Eigenvalues and Risk Aggregation factors
Source: Researcher, 2022

The two-component solution explained a total of 65.87% of the variance, with Component 1 contributing 40.08% and component 2 contributing 25.79%. To aid in the interpretation of these two components, varimax rotation was performed. The rotated solution revealed the presence of a simple structure, with this component showing a number of strong loadings and all variables loading substantially on the two components as shown in Table 4-16 below.

Table 4-16: Rotated component Matrix for Risk Aggregation factors

	Component	
	1	2
The key risk indicators have been properly assigned and are regularly monitored and reported	**0.913**	
The organization has identified key risk indicators	**0.888**	
The agency's risk culture is inexorably linked to the organization's culture	**0.748**	0.182

The agency has in place a policy and guidelines for setting risk targets (risk appetite and tolerance) considering the various types of risks that modern corporations may be subject to.		**0.830**
The board of directors sets risk targets (risk appetite and tolerance) with regard to each risk identified at the agency.	0.120	**0.807**
The key performance indicators are regularly monitored and reported		**0.603**
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Using a minimum loading value of 0.4, the study was able to extract significant variables under each component as shown in Table 4-16 above. Variables under component1 were interpreted to be in relation to risk monitoring. ISO 31000 (2018), highlights risk monitoring as one of the key activities that aid in embedding risk culture in the organization. The variables included; key risk indicators have been properly assigned and are regularly monitored and reported (0.913), the organization has identified key risk indicators (0.888), and the agency's risk culture is inexorably linked to the organization's culture (0.748). Component 2, had 3 variables which included; The agency has in place a policy and guidelines for setting risk targets (risk appetite and tolerance) considering the various types of risks that modern corporations may be subject to (0.830), the board of directors sets risk targets (risk appetite and tolerance) with regard to each risk identified at the agency (0.807), and key performance indicators are regularly monitored and reported (0.603). These could have been classified as variables that relate to risk targets in independent regulatory agencies.

4.5.2.4 Derivation of factors of Misstatement of financial reports

The principal component analysis was used to identify variables that account for more variability and extract new factors based on the total variance explained as shown in Table 4-17 below.

Table 4-17: Total Variance Explained for Misstatement of Financial Reports

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.459	57.650	57.650	3.459	57.650	57.650
2	0.958	15.974	73.624			
3	0.706	11.759	85.383			
4	0.535	8.918	94.300			
5	0.266	4.436	98.736			
6	0.076	1.264	100.000			
Extraction Method: Principal Component Analysis.						

Source: Researcher, 2022

Principal Components Analysis revealed a simple structure with one main component driving the Misstatement of financial reports factor. The factor was also in line with the eigenvalue minimum value of 1.0 for analysis (Yong & Pearce, 2013) as shown on the scree plot in Figure 4-5.

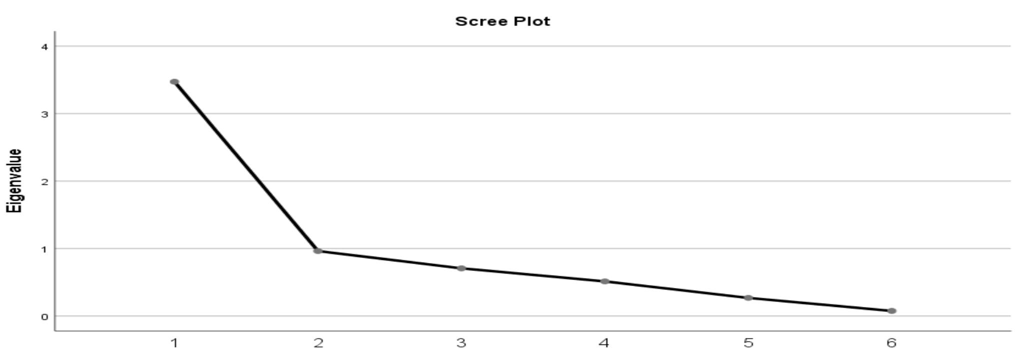

Figure 4-5: Scree Plot depicting the association between Eigenvalues and misstatement of financial reports factors
Source: Researcher, 2022

Table 4-18: Rotated Component Matrix for Misstatement of financial Reports

	Component
	1
Overstating revenue	0.921
Overstating expenses	0.918
Timing difference by not observing the cut-off period	0.782
Inappropriate revaluation of amount of fixed assets	0.689
Concealed liabilities	0.611
Missing of disclosure	0.556
Extraction Method: Principal Component Analysis.	
a. 1 component extracted.	

In Table 4-18 above, all variables under misstatement of financial statements are loaded meaningfully under component 1. It, therefore, provided adequate justification for the study to use averages as a composite measure for determining the variable for misstatement of financial statements.

4.5.2.5 Derivation of factors of Asset misappropriation

The principal component analysis was used to identify variables that account for more variability and extract new factors based on the total variance explained as shown in Table 4-19 below.

Table 4-19: Total Variance Explained by Asset Misappropriation factors

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %

1	3.732	62.205	62.205	3.658	60.969	60.969
2	1.058	17.637	79.842	1.132	18.872	79.842
3	0.579	9.656	89.497			
4	0.287	4.790	94.287			
5	0.208	3.465	97.752			
6	0.135	2.248	100.000			

Source: Researcher, 2022

Principal Components Analysis revealed that there are two main components driving the Asset misappropriation factor which is in line with the eigenvalue minimum value of 1.0 for analysis (Yong & Pearce, 2013). An inspection of the scree plot (Figure 4-6) using Cattell, (1966) revealed a clear break after the second component.

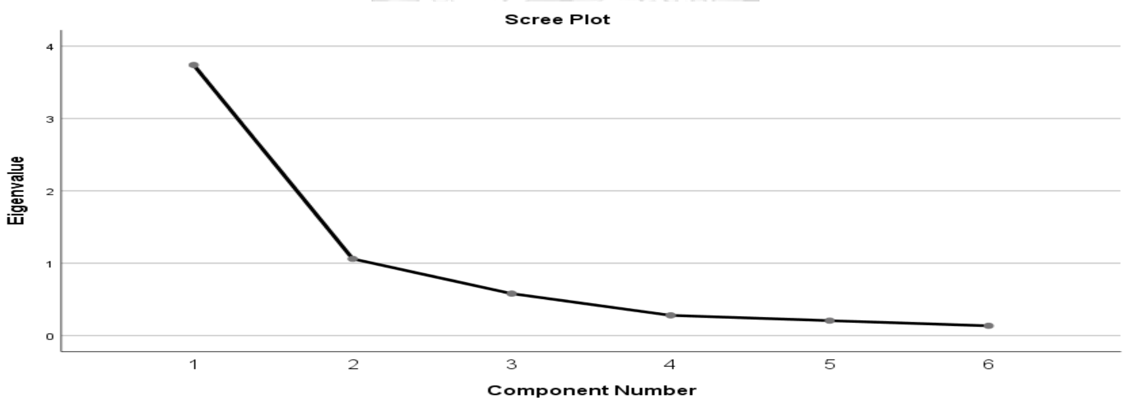

Figure 4-6: Scree Plot depicting the association between Eigenvalues and asset misappropriation factors
Source: Researcher, 2022

The two-component solution explained a total of 79% of the variance, with Component 1 contributing 62.24% and component 2 contributing 17.64%. To aid in the interpretation of these two components, varimax rotation was performed. The rotated solution revealed the presence of a simple structure with this component showing a number of strong loadings and all variables loading substantially on the two components as shown in Table 4-20 below.

Table 4-20: Rotated Component Matrix for Asset Misappropriation

	Component	
	1	2
Misuse of company assets	**0.926**	
Theft of petty cash and cash receipts	**0.906**	
Cash and inventory larceny	**0.892**	0.180
Fictitious claims for expenses	**0.874**	
Payroll schemes	**0.649**	0.398
Cheque tampering		**0.965**
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
Rotation converged in 3 iterations.		

Source: Researcher, 2022

In Table 4-20 above, the variables under component 1 comprised; Misuse of company assets (0.926), Theft of petty cash and cash receipts (0.906), Cash and inventory larceny (0.892), Fictitious claims for expenses (0.874), and Payroll schemes (0.649). These variables are related to current asset misappropriation schemes being perpetrated in Independent regulatory agencies. Cheque tampering (0.964) which is a traditional scheme that was used in the past but has since been overtaken by events with the adoption of online and mobile platforms in independent regulatory agencies, was the only variable under component 2.

4.5.2.6 Derivation of factors of Corruption

The principal component analysis was used to identify variables that account for more variability and extract new factors based on the total variance explained as shown in Table 4-21 below.

Table 4-21: Total Variance Explained by Corruption factors

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.812	80.201	80.201	4.812	80.201	80.201
2	0.416	6.933	87.133			
3	0.386	6.436	93.569			
4	0.178	2.959	96.528			
5	0.132	2.192	98.720			
6	0.077	1.280	100.000			

Source: Researcher, 2022

Principal Components Analysis revealed that only one component was extracted that explained 80.2% of the variance. The factor was in line with the eigenvalue minimum value of 1.0 for analysis (Yong & Pearce, 2013) and also as shown on the scree plot in Figure 4-7. The new component showed a factor loading greater than 0.4 for all items loading substantially on only one component as shown in Table 4-22.

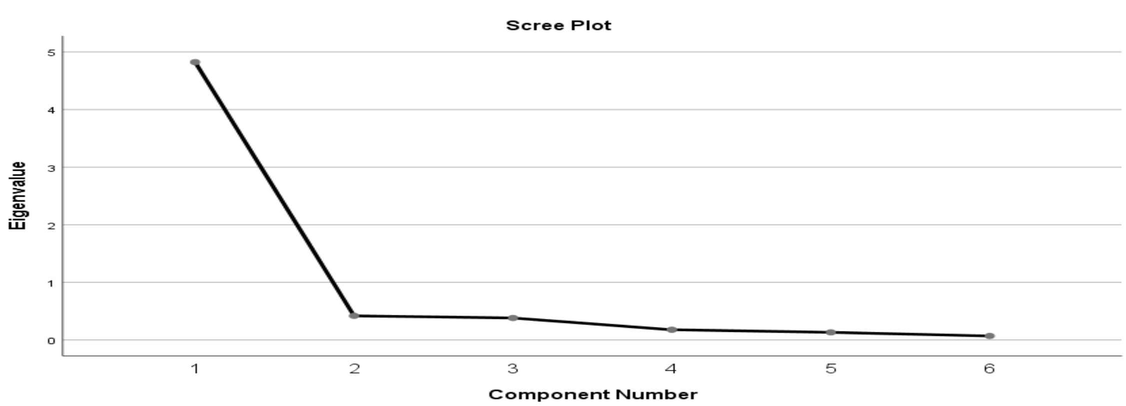

Figure 4-7: Scree Plot depicting the association between Eigenvalues and asset misappropriation factors
Source: Researcher, 2022

Table 4-22: Rotated Component Matrix for Corruption factors

	Component
	1
Employees taking bribes in exchange for providing public services	0.828
Purchasing scheme involves favoring a supplier related to an employee who had a financial interest in the purchasing transactions.	0.931
Employee assisting to secure a payment involving an inflated invoice.	0.840
Employees taking bribes in order to influence the award of lucrative deals	0.926
Misuse of business time	0.930
Abuse of power to override controls	0.912
Extraction Method: Principal Component Analysis.	
a. 1 component extracted.	

In Table 4-22 above, all the variables under corruption had factor loadings of greater than 0.4 and they assessed component 1. It, therefore, provided adequate justification for the study to use averages as a composite measure for determining the variable for corruption.

4.5.2.7 Mwongozo code

The principal component analysis was used to identify variables that account for more variability and extract new factors based on the total variance explained as shown in Table 4-23 below.

Table 4-23: Total Variance Explained Mwongozo factors

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %

1	5.357	59.525	59.525	5.357	59.525	59.525
2	0.863	9.586	69.111			
3	0.645	7.165	76.275			
4	0.528	5.863	82.139			
5	0.422	4.694	86.832			
6	0.383	4.251	91.084			
7	0.334	3.709	94.793			
8	0.320	3.557	98.349			
9	0.149	1.651	100.000			
Extraction Method: Principal Component Analysis.						

Source: Researcher, 2022

Principal Components Analysis revealed only one component was extracted that explained 59% of the variance of the Mwongozo Code factor. The component was in line with the eigenvalue minimum value of 1.0 for analysis (Yong & Pearce, 2013). The scree plot in Figure 4-8 shows a clear break after the first component. The component showed a factor loading greater than 0.4 for all items loading substantially on only one component as shown in Table 4-24 below.

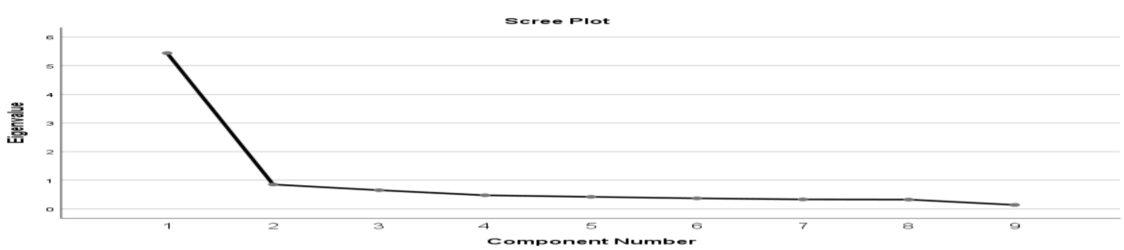

Figure 4-8: Scree Plot depicting the association between Eigenvalues and asset misappropriation factors
Source: Researcher, 2022

Table 4-24: Rotated Component Matrix Mwongozo Code factors

	Component
	1
The Mwongozo Corporate Governance Code aids in the deterrence of fraud at the agency.	0.883
The Mwongozo code has increased the transparency of the agency's operations and decision-making process.	0.845
The Mwongozo code aids the deterrence of unreasonable exposures of the company by the management.	0.843
The adoption of the Mwongozo code has considerably aided the agency's efforts to preserve ethics and principles.	0.824
The adoption of the Mwongozo code has increased the agency's accountability, resulting in improved performance.	0.797
The Mwongozo code ensures that the agency's rules, regulations, policies, procedures, and contracts are followed to minimize penalties and fines.	0.774
The Mwongozo code guarantees a power balance among the agency's diverse stakeholders.	0.681
The Mwongozo code facilitates the identification, monitoring, and management of risks at the agency.	0.661
The Mwongozo code has enhanced the reliability and precision of financial and operational data at the agency.	0.646
Extraction Method: Principal Component Analysis.	
a. 1 component extracted.	

In Table 4-24 above, all the variables under Mwongozo Code had loading meaningfully under component 1. It, therefore, provided adequate justification for the study to use averages as a composite measure for determining the variable for Mwongozo.

4.6 Correlational analysis

This study used Spearman Rank correlation analysis to determine the relationship between the study variables. Correlation analysis is a measure of association or relationship between two variables. Spearman rank correlation coefficient was used since the constructs derived from factor analysis did not follow a normal distribution and the dependent variable was a categorical variable.

A perfect positive linear relationship, r=1. The weaker the linear relationship between the variables, results in a correlation coefficient equal to 0, meaning no linear relationship. A value greater than 0 indicates a positive association where the value of one variable increases, as does the value of the other variable. While, a value lower than 0 indicates a negative association (Mizon, G. 1995). The findings are in Table 4-25 below.

Table 4-25: Correlation Analysis

Spearman Rank correlation											
	MFR	AM	Corruption	Risk_identification_assessment	Risk Mitigation	Risk Evaluation	Capacity &Proficiency	Governance Structures	Risk Monitoring	Risks Targets	Zscore: Mwongozo

												code
MFR	R	1.000	.484**	.423**	-0.184	-0.107	-0.028	-.303**	-0.132	-.295**	-0.140	-.282**
	P-value		0.000	0.000	0.086	0.322	0.794	0.004	0.220	0.005	0.193	0.008
	N	88	88	88	88	88	88	88	88	88	88	88
AM	R	.484**	1.000	.475**	-0.150	-0.021	0.012	-.232*	-0.090	-.214*	0.149	-.211*
	P-value	0.000		0.000	0.162	0.844	0.913	0.030	0.406	0.046	0.167	0.049
	N	88	88	88	88	88	88	88	88	88	88	88
Corruption	R	.423**	.475**	1.000	-.306**	-0.092	-0.096	-0.119	-0.057	-0.176	0.126	-.252*
	P-value	0.000	0.000		0.004	0.396	0.371	0.269	0.597	0.100	0.241	0.018
	N	88	88	88	88	88	88	88	88	88	88	88
Risk_identification_assessment	R	-0.184	-0.150	-.306**	1.000	.225*	.409**	-0.188	.393**	-0.119	-.292**	-0.169
	P-value	0.086	0.162	0.004		0.035	0.000	0.080	0.000	0.270	0.006	0.116
	N	88	88	88	88	88	88	88	88	88	88	88
Risk Mitigation	R	-0.107	-0.021	-0.092	.225*	1.000	.399**	-0.178	0.193	-.310**	-.212*	-.278**
	P-value	0.322	0.844	0.396	0.035		0.000	0.096	0.071	0.003	0.048	0.009
	N	88	88	88	88	88	88	88	88	88	88	88
Risk Evaluation	R	-0.028	0.012	-0.096	.409**	.399**	1.000	-.285**	0.152	-.213*	-.413**	-.334**
	P-value	0.794	0.913	0.371	0.000	0.000		0.007	0.157	0.046	0.000	0.001
	N	88	88	88	88	88	88	88	88	88	88	88
Capacity&Proficiency	R	-.303**	-.232*	-0.119	-0.188	-0.178	-.285**	1.000	-.219*	.457**	.363**	.434**
	P-value	0.004	0.030	0.269	0.080	0.096	0.007		0.041	0.000	0.001	0.000
	N	88	88	88	88	88	88	88	88	88	88	88
Governance Structures	R	-0.132	-0.090	-0.057	.393**	0.193	0.152	-.219*	1.000	-0.173	-0.176	-0.209
	P-value	0.220	0.406	0.597	0.000	0.071	0.157	0.041		0.108	0.101	0.051
	N	88	88	88	88	88	88	88	88	88	88	88
Risk Monitoring	R	-.295**	-.214*	-0.176	-0.119	-.310**	-.213*	.457**	-0.173	1.000	.338**	.365**
	P-value	0.005	0.046	0.100	0.270	0.003	0.046	0.000	0.108		0.001	0.000
	N	88	88	88	88	88	88	88	88	88	88	88
Risks Targets	R	-0.140	0.149	0.126	-.292**	-.212*	-.413**	.363**	-0.176	.338**	1.000	.399**
	P-value	0.193	0.167	0.241	0.006	0.048	0.000	0.001	0.101	0.001		0.000
	N	88	88	88	88	88	88	88	88	88	88	88

Zscore: Mwongozo code	R	-.282**	-.211*	-.252*	-0.169	-.278**	-.334**	.434**	-0.209	.365**	.399**	1.000
	P-value	0.008	0.049	0.018	0.116	0.009	0.001	0.000	0.051	0.000	0.000	
	N	88	88	88	88	88	88	88	88	88	88	88
**. Correlation is significant at the 0.01 level (2-tailed).												
*. Correlation is significant at the 0.05 level (2-tailed).												

Source: Researcher, 2022

It is observed in Table 4.25 above that there is a weak negative correlation between the dependent variables (Fraud occurrence) and independent variables. For instance, the findings show that the correlation coefficients between Misstatement of financial statements and Risk management process and risk governance were negative but not significant. The correlation coefficient between Misstatement of financial statements and Risk identification and assessment was negative and significant (*coefficient= -0.184, p-<0.05*). This meant that the relationship is weak, and the Misstatement of financial statements reduces when risk identification and assessment increases. The correlation coefficients between Asset misappropriation and Risk identification & assessment, Risk Mitigation, Risk Evaluation, Capacity & Proficiency, Governance Structures, Risk Monitoring, and Risks Targets was negative but not significant ($p > 0.05$). This implies that these relationships were very weak and not reliable. The relationship between corruption and the independent variables was also negative but not significant ($p > 0.05$). Only the Mwongozo code had a significant relationship with the dependent variables. Mwongozo code and Misstatement of financial reports had an inverse relationship (R = -0.282, *p-<0.05*) which means that an increase in the Mwongozo code would result in a reduction in Misstatement of financial statements. The table also shows that there was no significant multicollinearity effect since all the correlation coefficients between the independent variables was less than 0.90 (Mizon, G. 1995).

4.7 Regression Analysis

Regression analysis was utilized to test the research hypotheses. To establish the effect of independent variables on the dependent variable (y), fraud occurrence among independent regulatory agencies in Kenya in the presence of control variables, a logit regression model was used as defined by the following equation.

The dependent variable was transformed into two categories; Scores above 3 were coded as agree (Value =1) and below 4 was considered disagree. 1 and 2 imply low fraud occurrence while 3-5 imply high fraud occurrence.

Logistic Model:

Logit {P(y=1)} $= \ln\left(\frac{p}{1-p}\right) =$ $\beta_{0+}\beta_1$ *Risk identification & assessment + β_{2*}Risk mitigation + β_{3*}Risk evaluation + β_4*Capacity & Proficiency +β_5* Governance structures + β_6* Risk Monitoring + β_7*Risk Targets +ε

Where $MFS, AM, Corruption = y = \begin{cases} 1 = Agree \\ 0 = Disagree \end{cases}$

Where p is the probability of the event occurring e.g. occurrence of misstatement of financial statements.
1-p is the probability of low fraud occurrence.

4.7.1 Effect of Independent variables on fraud occurrence among independent regulatory agencies in Kenya

To achieve this objective, a logit regression was used to determine the effect of independent variables on fraud occurrence among independent regulatory agencies in Kenya in the presence of control variables. Fraud occurrence was measured using Misstatement of financial reports, Asset misappropriation, and Corruption. The three models are presented using the equations below.

Model 1: MFS = $\beta_0 + \beta_2$RMP + β_3RG + β_4RA + β_5MC+ ε

Model 2: AR = $\beta_0 + \beta_2$RMP + β_3RG + β_4RA + β_5MC+ ε

Model 3: Corruption = $\beta_0 + \beta_2$RMP + β_3RG + β_4RA + β_5MC+ ε

Table 4.26 below presents a model summary for the three models. According to the findings, model 1 was significant $(\text{chi} - \text{square} = 23.784, \text{df} = 7, \text{p} < .05)$ hence the model is significantly better in the prediction of the dependent variable. The Nagelkerke R squared of 0.387, indicating approximately 38.7% of the variance of the Misstatement of financial statements could be accounted for by the independent variables and (1-0.387)

% represented the unexplained variation. With the independent variables added, the model now correctly classifies 87.5% of cases of Misstatement of financial statements.

Model 2 was not significant $(\text{chi} - \text{square} = 11.990, \text{df} = 7, \text{p} > .05)$. The Nagelkerke R squared was 17.7% indicating approximately 18% of the variance of the asset misappropriation could be accounted for by the independent variables and (1-0.177)% represented the unexplained variation. With the independent variables added, the model now correctly classifies 68.2% of cases of asset misappropriation.

Model 3 was significant $(\text{chi} - \text{square} = 17.550, \text{df} = 7, \text{p} < .05)$.The Nagelkerke R squared was 0.241, indicating approximately 24% of the variance of Corruption could be accounted for by the independent variables and (1-0.241) % represented the unexplained variation. With the independent variables added, the model now correctly classifies 72.7% of cases of corruption.

Table 4-26: Logistic Regression Analysis Results depicting the Effects of the Risks management process, Risk governance, and Risk Aggregation on the level of Fraud Occurrence in Independent Regulatory Agencies

		Dependent: Fraud Occurrence (FO)		
Regression coefficients				
Independent variables	**Extracted variables from factor analysis**	**Model 1**	**Model 2**	**Model 3**
	(Constant)	2.166	0.816	0.078
Risk management process	Risk_identification_assessment	-0.905	-0.398	-1.215***
	Risk Mitigation	0.733	-0.127	-0.030
	Risk Evaluation	-0.054	0.026	-0.123
Risk Governance	Capacity Proficiency	-0.638	-0.707**	-0.468
	Governance Structures	-0.408	-0.117	0.215
Risk aggregation	Risk Monitoring	-0.886**	-0.285	-0.405
	Risks Targets	0.398	-0.309	-0.206
	Prediction Accuracy	87.5%	68.2%	72.7%
	-2 Log likelihood	59.665[a]	99.568[a]	104.398[a]

	Cox & Snell R Square	0.237	0.127	0.181
	Nagelkerke R Square	0.387	0.177	0.241
	Chi-square tests	23.784**	11.990	17.550**
	df	7	7	7
	***p < .01, **p < .05, *p<0.1			
Model 1: FO -Misstatement of financial reports Model 2: FO -Asset misappropriation Model 3: FO -Corruption				

Source: Researcher, 2022

From table 4.26 above, in model 1, only risk monitoring has a significant negative effect on fraud occurrence as measured by misstatement of financial statements (coefficient = -0.886, p-value < 0.05). This implies that an increase in risk monitoring activities leads to a reduction in the misstatement of financial statements. Risk monitoring was extracted from risk aggregation in factor analysis. It thus implies that risk aggregation has a significant negative effect on the misstatement of financial statements in independent regulatory agencies in Kenya.

Model 2 shows that only capacity & proficiency has a significant negative effect on fraud occurrence as measured by asset misappropriation (coefficient = -0.707, p-value < .05). Increase in capacity and proficiency of employees charged with risk management in independent regulatory agencies will thus lead to a reduction in asset misappropriation. Capacity and proficiency is a factor under the risk governance variable as per the factor analysis. This, therefore, implies that risk governance has a significant negative effect on asset misappropriation in independent regulatory agencies.

Finally, model 3 shows that Risk identification & assessment has a significant negative effect on fraud occurrence as measured by Corruption (coefficient = -0.707, p-value < .05). Increase in risk identification and assessment activities leads to a reduction in incidents of corruption. Risk identification and assessment is a variable under the risk management process as analyzed under factor analysis. The results, therefore, imply that the risk management process has a significant negative effect on corruption in independent regulatory agencies.

4.7.2 Regression Analysis for Moderating Variable

This study's fourth specific goal was to see if the Mwongozo code of Corporate Governance had a moderating influence on the relationship between enterprise risk management and fraud occurrence. The moderating effect was tested using the method proposed by Baron and Kenny (1986). It involved testing the main effects of the independent variable (Risk management process, Risk Governance, Risk Aggregation) and moderator variable (Mwongozo code) on the dependent variable (Fraud occurrence) and the interaction between independent variables & Mwongozo code. The interaction term was computed by obtaining the product of standardized scores of independent variables and mwongozo code. Moderation is assumed to take place if the interaction between independent variables and mwongozo code is significant. Fraud occurrence was measured using Misstatement of financial statements, Asset misappropriation, and Corruption.

The analysis was undertaken in two steps where the first step involved testing the influence of the Risk management process, Risk Governance, Risk Aggregation, and mwongozo code on Fraud occurrence. The second step involved the introduction of the interaction term through stepwise regression analysis. The models are presented using the equations below.

Misstatement of financial statements (MFS)

Model 1: $MFS = \beta_0 + \beta_2 RMP + \beta_3 RG + \beta_4 RA + \beta_5 MC + \varepsilon$

Model 2: $MFS = \beta_0 + \beta_2 RMP + \beta_3 RG + \beta_4 RA + \beta_5 MC + \beta_6 RMP*MC + \beta_7 RG*MC + \beta_8 RA*MC + \varepsilon$

Dependent variable; Asset misappropriation (AR)

Model 3: $AR = \beta_0 + \beta_2 RMP + \beta_3 RG + \beta_4 RA + \beta_5 MC + \varepsilon$

Model 4: $AR = \beta_0 + \beta_2 RMP + \beta_3 RG + \beta_4 RA + \beta_5 MC + \beta_6 RMP*MC + \beta_7 RG*MC + \beta_8 RA*MC + \varepsilon$

Dependent variable; Corruption

Model 5: $Corruption = \beta_0 + \beta_2 RMP + \beta_3 RG + \beta_4 RA + \beta_5 MC + \varepsilon$

Model 6: $Corruption = \beta_0 + \beta_2 RMP + \beta_3 RG + \beta_4 RA + \beta_5 MC + \beta_6 RMP*MC + \beta_7 RG*MC + \beta_8 RA*MC + \varepsilon$

The findings were presented in Table 4-27.

Table 4-27: Model Summary depicting results for the moderating effect of Mwongozo Code on the relationship between ERM and Fraud Occurrence

Dependent: Fraud Occurrence (FO)						
	Misstatement of financial statement		Asset misappropriation		Corruption	
Regression coefficients	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
(Constant)	2.529	5.135***	0.843	1.022***	0.119	-0.076
Risk_identification_assessment	-0.911	-0.004	-0.361	-0.413	-1.341***	-2.015***
Risk Mitigation	1.380**	2.189**	0.054	0.100	0.353	-0.777
Risk Evaluation	0.165	1.778	0.098	-0.020	0.046	0.507
Capacity & Proficiency	-0.451	-2.267*	-0.617*	-0.874**	-0.289	-0590
Governance Structures	-0.327	-2.868**	-0.110	-0.421	0.212	0.630
Risk Monitoring	-0.978**	-1.515*	-0.282	-0.156	-0.409	0.267
Risks Targets	0.343	2.042**	-0.353	-0.027	-0.290	-0.623
Zscore: Mwongozo code	-1.189**	-2.780**	-0.422	-0.209	-0.957***	-2.500***
Interaction_RM_MC		0.839		-1.523***		-5.132***
Interaction_RI_RA_MC		-2.525		0.456		-1.708
Interaction_RE_MC		-1.997*		0.145		2.370**
Interaction_CP_MC		-2.353**		0.375		0.214
Interaction_GS_MC		-4.295**		-0.503		1.358

Interaction_RMo_MC		-0.948		0.935*		3.398**
Interaction_RT_MC		-1.755		0.061		3.753**
Prediction Accuracy	86.4%	88.60%	73.9%	79.50%	76.1%	86.40%
-2 Log likelihood	53.496[a]	36.511[a]	97.653[a]	83.004[a]	95.315[a]	73.037[a]
Cox & Snell R Square	0.288	0.413	0.146	0.277	0.261	0.426
Nagelkerke R Square	0.471	0.675	0.203	0.386	0.348	0.569
Chi-square tests	29.952**	46.937***	13.905*	28.555***	26.634**	48.911***
df	7	15	7	15	7	15

***p < .01, **p < .05, *p<0.1

Models 1 & 2: FO -Misstatement of financial statements

Model 3 & 4: FO -Asset misappropriation

Model 5 & 6: FO -Corruption

4.7.2.1 Dependent variable: Misstatement of Financial Statements

The results in Table 4.27 show that model 1 is significant *(Chi- square =29.952, df = 7, p-value <0.05)* implying that Enterprise Risk Management (ERM) and the M*wongozo code* jointly explain 47.1% of the variation in *Misstatement of financial statements*. With the addition of Mwongozo Code and interaction terms, the model now correctly classifies 89% of cases of *Misstatement of financial statements*. Notably, when the interaction term was introduced, model 2 remains significant (chi-square = 46.937, df = 15, p < .05) with the change statistics revealing that R^2 change moved to 0.675. The interaction of mwongozo code and capacity and proficiency, (coefficient = -2.33, *p-value < 0.05)* and governance structures (coefficient = -4.295, *p-value < 0.05)* had significant negative effect on fraud occurrence as measured by misstatement of financial statements. Capacity and proficiency, and governance structures were extracted from risk governance hence we can conclude that the moderating effect of Mwongozo code between risk governance and misstatement of financial statements was significantly negative.

4.7.2.2 Dependent variable: Asset misappropriation

The results in Table 4.27 show that model 3 is significant *(Chi- square =13.905, df = 7, p-value <0.1)* implying that Enterprise Risk Management (ERM) and the M*wongozo code* jointly explain 20.3% of the variation in *Asset misappropriation*. With the addition of Mwongozo Code and interaction terms, the model now correctly classifies 80% of cases of *Asset misappropriation*. Notably, when the interaction term was introduced, model 4 remains significant *(Chi- square =28.555, df = 15, p-value <0.001)* with the change statistics revealing that R2 change moved to 0.386. The moderation effect is however not significant (coefficient = -0.209, *p > 0.5) hence* the hypothesis was not supported.

4.7.2.3 Dependent variable: Corruption

The results in Table 4.27 show that model 5 is significant *(Chi- square =26.634, df = 7, p-value <0.05)* implying that Enterprise Risk Management (ERM) and the M*wongozo code* jointly explain 34.8% of the variation in *Corruption*. With the addition of Mwongozo Code and interaction terms, the model now correctly classifies 86% of cases of *Corruption*. Notably, when the interaction term was introduced, model 6 remains significant *(Chi- square =48.911, df = 15, p-value <0.001)* with the change statistics revealing that R2 change moved to 0.569. The interaction terms of mwongozo code and Risk mitigation, Risk evaluation, Risk Monitoring, and Risk Targets were significant however there was no moderation *hence* the hypothesis was not supported.

CHAPTER FIVE

5 SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter contains the summary of the results, the conclusion, the findings of the study, and recommendations for further studies. The overall aim of the research was to examine the relationship between enterprise risk management and fraud incidents at independent regulators in Kenya. The specific research objectives aimed to determine the relationship between the risk management process and fraud cases; to establish the relationship between risk governance and fraud cases; to determine the relationship between risk aggregation and fraud cases, and to determine the moderating effect of the Mwongozo Code of Governance on the relationship between enterprise risk management and fraud incidents in independent regulatory bodies.

5.2 Summary of Research Purpose and Process

Kenya's public corporations have been plagued by extensive misappropriation and fraud throughout the years, resulting in enormous financial losses for Kenyans (Kiprono & Ng'an'nga 2018). The reasons for the losses could be attributed to financial system vulnerabilities and insufficient risk management process, risk governance, and risk aggregation that results in poor sector performance. Kenya's state-owned firms are governed by the Mwongozo Governance Code, which is founded on the objectives outlined in Article 10 of the Kenyan Constitution. Despite efforts to ensure that the public sector integrates enterprise risk management systems and benefits from them, Kenya's public sector continues to suffer from low and declining performance, impeding the country's long-term economic success (Kinyua, 2015). Enterprise risk management is still a work in progress for many government bodies, including independent regulators. Kenya's public institutions have been plagued by rampant corruption and fraud, causing the government to pass legislation aimed at tightening fraud controls and lowering fraud's occurrence and impact. Among the legislation that was passed is Treasury Circular No. 3/2009 on the implementation of enterprise risk management.

In light of this, the purpose of this study was to look at the effect of enterprise risk management on the prevalence of fraud in Kenya's independent regulatory authorities.

The study's specific objectives were to determine the relationship between enterprise risk management and fraud occurrences, to assess the relationship between risk governance and fraud occurrences, to evaluate the relationship between risk aggregation and fraud occurrences, and to look into the moderating role of the Mwongozo code of governance on the relationship between enterprise risk management and fraud occurrences in Kenyan independent regulatory agencies.

5.3 Discussion of Research Findings

5.3.1 Effect of risk management process on fraud occurrence in independent regulatory agencies

The study's initial goal was to figure out what link existed between the enterprise risk process and fraud in independent regulatory organizations. The descriptive results indicated that risk management practices were being undertaken in independent regulatory agencies. The results further indicate that risks are normally identified and assessed and mitigation measures put in place to address the risks that the organization face, among them the risk of fraud occurrence. This thus limits the likelihood of perpetration of fraud.

The results of the regression analysis also indicate that the risk management process had a significant negative effect on corruption. The results were idealistic and in line with the fraud triangle theory which indicates that weaknesses in control provide an opportunity for fraud to be committed (Deloitte, 2018). As risks are thus mitigated, incidents of fraud are also managed.

Analysis of the descriptive statistics indicated that risk assessment is generally practiced in independent regulatory agencies and it is key in fraud deterrence. The findings support the assertions of Mutuku (2016), who in his study sought to investigate the effect of risk management practices on the financial performance of commercial banks in Kenya, and noted that risk management practices significantly affected the performance of commercial banks. The study noted that commercial banks in Kenya were practicing risk management practices in line with Basel 111 framework that was recommended by the Central Bank of Kenya. The study also concurred with the findings of Ewool & Quartey

(2021), who noted moderate to strong positive relation between risk management and financial performance of microfinance institutions in Kumasi, Ghana.

The findings contradicted the findings of Lagat & Tenai, (2017) who asserted that there is no significant relationship between the risk management system and the financial performance of an entity. The research was centered on microfinance institutions and savings and cooperative societies in Kenya.

5.3.2 Effect of risk governance on fraud occurrence in independent regulatory agencies

The second objective was to establish if there was a link between risk governance and fraud in independent regulatory organizations. All risk governance practices (i.e., establishing standards and policies, presence of a risk management committee, periodic review of ERM framework, and capacity of risk management personnel) were found to be extensively practiced, albeit to variable degrees, in general. Risk governance has a negative impact on fraud incidence, according to descriptive data verifying the purpose. The majority of respondents agreed with these assumptions, resulting in this outcome. Respondents said, for example, that the agency's risk governance policy clearly outlines the agency's disclosure and whistle-blowing practices (95%), that the board of directors understands their role in risk management (81%), and that the agency has a well-defined risk governance policy (64%).

The results of the regression analysis also indicate that the risk governance practices represented by the capacity and proficiency of the personnel charged with risk management has a significant negative effect on asset misappropriation. The results were idealistic and in line with the recent developments in the fraud triangle theory that included capability among the factors that necessitate one to commit fraud (Wolfe and Hermanson, 2004). Proficient personnel are able to put in place adequate enterprise risk management practices that limit the probability of fraud.

The findings are in line with Erin et al, (2020), who noted that the presence of a chief risk officer, an effective board risk committee, and the inclusion of independent directors was critical in enhancing the performance of firms. The findings indicated that risk governance variables have a significant positive effect on the performance of the firms. The findings also concurred with Nahar et al, (2016), who noted a significant positive relationship between risk governance and bank performance. The findings indicated that risk governance characteristics were key in informing the performance of financial institutions and these characteristics informed stakeholders on the choice of the preferred banking institution.

The findings were also in line with Girangwa (2020), who asserted that risk structure, governance, and process practices had a positive and significant effect on the financial performance of the organization.

5.3.3 Effect of risk aggregation on fraud occurrence in independent regulatory agencies

The study's third goal was to determine if there was a link between risk aggregation and the prevalence of fraud in independent regulatory organizations. This goal focused on risk culture, key risk indicators (KRI), and key performance indicators (KPI) activities and practices (KPI). The statistical study confirmed that risk aggregation, which was represented by risk monitoring, has a negative and significant effect on the misstatement of financial statements.

Descriptive statistics, on the other hand, discovered that all risk-aggregation-related procedures were generally practiced by independent regulatory authorities. Respondents acknowledged that policy and processes for defining risk goals (risk appetite and tolerance) were in place. Respondents indicated that key performance indicators are regularly monitored and reported and these are key to fraud deterrence. The findings differed from Quon et al (2012), who noted that risk structure had no meaningful impact on organizational performance. They asserted that the financial crisis had an immediate impact on financial market performance and a delayed impact on accounting and operational performance. Laisasikorn et al (2014), were also not in agreement with the findings as they noted inconclusive results between risk aggregation and financial performance.

Respondents disagreed with the assertion that risk culture is intimately related to the organization's culture. This implies that independent regulatory agencies are yet to embed risk management into the organization's culture. Independent regulatory agencies, therefore, have work to do in order to instill risk management in the organization's culture; Umaru, et al., (2018), Harahap and Nengzih (2021).

5.3.4 Moderating effect of Mwongozo Code of Governance on the relationship between ERM and fraud occurrence

The fourth objective was to see whether the Mwongozo Governance Code had a moderating influence on the link between corporate risk management and fraud occurrence among Kenya's independent regulators. Transparency and disclosure; accountability, risk management, and internal control; ethical leadership and corporate citizenship; shareholder rights and duties; stakeholder interactions; sustainability and performance management; and compliance with laws and regulations were all part of this purpose. Transparency, accountability, risk management, and internal control, as well as adherence to rules and regulations, were employed as Mwongozo indicators.

The respondents generally agreed that Mwongozo Code guarantees a power balance among the agency's diverse stakeholders. This is in line with the stakeholder theory that providers that all stakeholders are important to the organization and as such, they should be treated equally (Muchiri, Gericke & Rheeder, 2019). This is also in line with Kamau (2013), who advocated for the inclusion of all stakeholders on the board of directors in order to effective governance and reduce conflicts.

Moderating influence was assessed using the Mwongozo product and enterprise risk management with the findings indicating that Mwongozo code moderates the relationship between ERM and misstatement of financial statements. Descriptive statistics however indicated that independent regulatory agencies are yet to fully implement the code. This finding is in line with Gathiri's (2020), argument that state corporations are harmed by inefficient and ineffective boards of directors, whose duties and responsibilities are not clearly defined when they take on the role, and who lack clear targets to guide the institutions' activities to ensure sustainability and profitability. The findings also concur with Girangwa (2020) that State Corporations have not properly implemented the Mwongozo Code, resulting in institutional degradation and low performance, which is linked to weak legal frameworks, corruption, and political involvement. An anti-fraud strategy must include both a strong ethical culture as well as an effective internal control mechanism. Internal controls, such as fraud prevention and detection, help to decrease fraud exposure and aid in asset protection. A good internal control system, on the other hand, will not be able to protect you against every type of fraud. The findings are consistent with the real-world situation, in which the Mwongozo code is ineffective in preventing and detecting fraud without other fraud prevention and detection measures in place.

5.4 Conclusions of the Study

Kenya's public-sector institutions have been wracked by huge corruption and fraud, prompting the government to create rules aimed at tightening fraud controls and reducing the possibility and effect of fraud. This study investigated the relationship between enterprise risk management and fraud occurrence in independent regulatory agencies in Kenya. Based on the findings, the researcher inferred some important conclusions.

5.4.1 Fraud Occurrences

The study's findings demonstrated a negative correlation between enterprise risk management and fraud occurrences, suggesting that it may be used as a fraud-prevention strategy. The investigation found that a majority of Kenya's independent regulatory agencies had enterprise risk management frameworks and systems in place. They recognize the significance of enterprise risk management implementation from both regulatory compliance and a business value addition standpoint. The existing risk management strategies of the majority of independent regulatory agencies appear to promote effective corporate governance.

The results also reveal that the enterprise risk management function was largely housed in the finance or audit departments; it was impossible to determine its exact influence on fraud mitigation in the whole organization. This is consistent with the Agency theory and the stakeholder theory from the fact that there are many relationships and stakeholders involved in the proper functioning of an organization.

5.4.2 Risk Management Process

In regard to the first objective, the risk management process is statistically significant to corruption, implying that there is a link between the risk management process and the occurrence of corruption. The challenge with independent regulatory bodies is that they have not effectively established the costs and benefits of addressing risks. It, therefore, becomes a challenge to dedicate resources toward the management of risks since there are no measures in place to assess whether independent regulatory bodies are benefiting from managing risks. This is consistent with the fraud triangle theory since the processes of opportunity, motive, and rationalization involved in the determination and reporting of costs and benefits are very important.

5.4.3 Risk Governance

In terms of the second objective, risk governance had a negative significant relationship with asset misappropriation. Further, respondents indicated that there are policies in place within the agencies that explicitly explain the disclosure and whistle-blowing procedures. At least once a year, formal reviews on the current state of risk management are reported to the board. However, there are gaps in terms of providing enough hazards to dissuade fraud. As a result, these firms must concentrate on allocating appropriate resources to risk management and employing qualified personnel that will put in measures to mitigate fraud risks in the organization. This is consistent with the stakeholder theory and the fraud triangle theory from the fact that the stakeholders are involved in determining the opportunities, motives, and rationalization of the various procedures to be adhered to by an organization.

5.4.4 Risk Aggregation

According to the third objective, risk aggregation is statistically significant, and influences the relationship between risk aggregation and misstatement of financial statements. Management has put in place measures to link to key performance indicators and risk targets are normally set by the Board. A key challenge however is that independent regulatory agencies are yet to fully embed risk culture in the operations of the institutions. This could be attributed to the fact that risk management is yet to mature in the organization and is still being practiced within the Departments of audit, and finance that is tasked with implementing and monitoring the effectiveness of internal controls especially those related to fraud. Due to the lack of risk culture within the organization, it can be deduced that management overlooks risks in making critical decisions. It's also unclear whether there's a register that keeps track of how often fraud occurs, and whether the occurrence of fraud and management's recognition of it is adequately disclosed to employees. This is consistent with the fraud triangle theory since the motive and rationalization in risk identification and categorization are important activities within an organization. The findings concur with Milhaud & Dutang (2018), who noted a significant relationship between operational choices and risk aggregation.

5.4.5 The Mwongozo Code

The research also sought to assess if the Mwongozo code of governance had a mediation effect on the link between enterprise risk management and fraud incidents in Kenya's independent regulatory institutions. The Mwongozo had a moderating influence on the association between enterprise risk management and misstatement of financial statements in Kenya's independent regulatory institutions. Several independent regulatory agencies cited that enterprise risk management is a popular practice. The enterprise risk management used by independent regulatory organizations, on the other hand, was in accordance with the Mwongozo principles. This is consistent with the stakeholder theory from the fact that there are many relationships and stakeholders involved in the implementation of the various set rules and procedures in an organization.

5.5 Recommendation for Policy and Practice

The findings of this study have important implications for policy and practice that can be drawn to enhance enterprise risk management in independent regulatory agencies and other organizations in Kenya.

5.5.1 Fraud Occurrences

The management of the state agencies should invest the firm's financial resources in obtaining the most effective fraud prevention and detection systems, which are expensive but extremely efficient and successful in discovering ongoing fraud or preventing fraud from occurring. As a result, by weighing the cost-benefit analysis of procuring the most widely perceived effective anti-fraud techniques, businesses can avoid large fraud losses that could force them to close down simply because they were being frugal in deciding whether or not to procure expensive anti-fraud techniques. Each year, the appropriate authorities should perform a mandated governance audit of state corporations.

5.5.2 Risk Management Process

In Kenya's independent regulatory agencies, the risk management process was observed to have a positive impact on fraud occurrences. Policy developers should thus be encouraged to develop a framework to guide public institutions to implement enterprise risk management and enjoy the benefits arising from its implementation. Risk identification, risk assessment, and risk mitigation are all parts of the risk management process that state corporations could consider strengthening. Risk mitigation and monitoring, in particular, should be advocated to ascertain if mitigation initiatives were successful and, over time, to diminish the recurrence of risk.

5.5.3 Risk Governance

In Kenya's independent regulatory agencies, risk governance was found to have a favorable impact on the occurrence of fraud in Kenya's independent regulatory authorities. As a result, the management of independent regulatory agencies/state corporations should strengthen all risk governance efforts.

5.5.4 Risk Aggregation

Similarly, Kenya's independent regulatory bodies' enterprise risk management policies should promote robust risk aggregation and corporate governance. This will guarantee that these businesses are managed effectively and responsibly, as the public expects. Independent regulatory bodies must assure excellent strategic risk management to meet their aims and objectives. The reason for this is that risks prevent a company from achieving its goals and objectives. According to the study, all Kenyan independent regulatory bodies should not only employ comprehensive enterprise risk management practices but also completely execute their enterprise risk management frameworks. Both are likely to deter fraud in one manner or another.

5.5.5 The Mwongozo Code

The Mwongozo Code was found to have a moderating effect on the relationship between enterprise risk management and fraud occurrence. State corporations should therefore be encouraged to fully implement Mwongozo to enjoy the benefits. Audits should also be undertaken on the status of implementation of Mwongozo and the public sector is encouraged to make redress in the areas where Mwongozo is not fully implemented. The Mwongozo should demand that the State Corporations' board of directors set objectives for profitability and long-term viability. Profits earned by state corporations should be measured rather than production. The Mwongozo should mandate the development of a policy framework that incorporates fraud prevention and detection measures, making it essential for the management of all Kenyan State Corporations to employ them in identifying or restraining fraudulent actions that might result in significant losses.

5.6 Limitations of the Study

The conclusions of this study, like most studies of this type, should be evaluated with several limitations in view. First, there are few publications on enterprise risk management in the public sector in Kenya, making secondary data from other comparable studies difficult to obtain. It was also difficult to have access to the information produced by independent regulatory agencies. The researcher overcame this obstacle by examining comparable studies in different sectors, both locally and internationally, to deduce the research findings.

Another limitation is that this research was conducted solely in independent regulatory agencies without including private sector enterprises, which is a restriction in itself. This might indicate that the findings cannot be generalized to other industries. This can be mitigated, though, by conducting a thorough examination of other public sectors. There was also a dearth of recent research on enterprise risk management in the public sector, particularly in emerging nations like Kenya.

The study was limited to a sample size of 25 independent regulatory agencies; if we had compiled a larger sample size by integrating other state corporations, the analysis might have been more significant. The research included a 5-year time frame from 2016 to 2020, a period during which the enterprise risk management concept is advancing in the public sector and hence may not reflect the depth of enterprise risk management implementation maturity across the board. Other State Corporations that were not included in this study may have cited difficulties in implementing enterprise risk management. The study's data collection was limited by a time limitation, especially when respondents took their time to fill out the questionnaires.

5.7 Suggestions for Further Study

Future research should focus on replicating this study's results and conclusions in other Kenyan organizations and sectors of the economy. In addition, further study should be done to look at the moderating and mediating effects of other variables on the link between enterprise risk management and fraud. Further, more studies need to be done to determine how the Mwongozo code influences other variables such as performance and governance in the public sector.

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APPENDIX I: Researcher's Introduction Letter

Strathmore UNIVERSITY BUSINESS SCHOOL

Ole Sangale Rd, Madaraka Estate,
P.O Box 59857 00200, Nairobi, Kenya.
Cell: +254 703 414/6/7, Twitter: @SBSKenya
Email: info@sbs.ac.ke or visit www.sbs.strathmore.edu

22nd September 2021

To whom it may concern, Dear Sir/ Madam

RE: FACILITATION OF RESEARCH – MICHAEL KIBUKOSYA

This is to introduce Michael Kibukosya who is a Master of Commerce (MCOM) Student at Strathmore University Business School, admission number MCOM/060799. As part of our MCOM Program, Michael is expected to do applied research and undertake a project. This is in partial fulfillment of the requirements of the MCOM course. To this effect, Michael would like to request appropriate data from your organization.

Michael is undertaking a research paper on "**Effect of Enterprise Risk Management on Fraud Occurrence in Independent Regulatory Agencies in Kenya.**" The information obtained shall be treated confidentially and shall be used for academic purposes only.

Our MCOM seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and practical value to your organization.

We appreciate your support and shall be willing to provide any further information if required.

Yours sincerely,

Njoki Kiagiri

Associate Manager – Graduate Programs. Strathmore University Business School.

Strathmore Business School is a Proud member of:

Association of African Business Schools AABS EFMD AACSB

APPENDIX II: Research Questionnaire

This questionnaire seeks to collect data to assist in conducting a study on **'Effect of Enterprise Risk Management on Fraud Occurrence in Independent Regulatory Agencies in Kenya.'** The data that you provide herein will be confidential and will be strictly for academic use.

Instructions

Do not write your name anywhere on this questionnaire.

Where choices are given, kindly tick **(√)** inside the relevant box to indicate the correct answer, otherwise, write your answer in the spaces given where there are no choices given.

SECTION A: Background

1) How long have you worked in this organization? (please tick the appropriate option)

   3 years and below ( )

   4-7 years ( )

   8-11 years ( )

   12 years and above ( )

2) What is your position in this organization?

   i. Chief Risk Officers ☐

   ii. Heads of Internal audit. ☐

   iii. Chief Finance managers ☐

   iv. Accounts officer ☐

   v. Risk Champion ☐

SECTION B: Risk Management Process

3) Does your organization carry out risk identification?

a). Yes

b). No

4) Rate based on the level of agreement relating to risk identification in relation to enterprise risk management in independent regulatory agencies by ticking (√) in the applicable column. (1-strongly disagree, 2- disagree, 3-neutral, 4-agree, and 5-strongly agree.)

No.	Statements	1	2	3	4	5
1	Risk identification is vital for effective risk management					
2	Risk identification is positively significant to influence risk management practices					
3	Risk identification informs the ranking of risks according to their significance					
4	Risk identification assists the management to develop a risk management strategy to allocate resources efficiently					
5	A risk assessment matrix is vital for effective risk management					
6	Risk is evaluated in terms of both quantitative and qualitative value.					
7	Risks are evaluated with assumptions and uncertainties					

	being considered and presented.					
8	Your organization undertakes risks and vulnerability analysis.					
9	Your organization transfers risks to other parties such as insurance.					
10	Your organization avoids risk by having standard procedures.					
11	Your organization reduces risks by creating provisions for contingencies.					
12	Controls exist for approving decisions regarding financing alternatives and accounting principles, practices, and methods.					

SECTION C: Risk Governance

5) Rate based on the level of agreement relating to risk governance in relation to enterprise risk management in independent regulatory agencies by ticking (√) in the applicable column. (1-strongly disagree, 2- disagree, 3-neutral, 4-agree, and 5-strongly agree.)

No.	**Statements**	**1**	**2**	**3**	**4**	**5**
1.	The agency has a well-defined risk governance policy.					
2.	The risk governance policy clearly outlines the Disclosure practices and whistleblowing practices within the agency.					
3.	The agency board of directors has the requisite expertise to manage risks.					

4.	The board of directors understands its role in relation to the agency's risk management.					
5.	The board of directors has established a risk committee within the larger board.					
6.	The agency has a qualified officer in charge of risk management.					
7.	The Risk Officer is empowered to perform his duties effectively.					
8.	The board periodically arranges for external assessments of the risk management framework.					

SECTION D: Risk Aggregation

6) Rate based on the level of agreement relating to risk aggregation in relation to enterprise risk management in independent regulatory agencies by ticking (√) in the applicable column. (1-strongly disagree, 2- disagree, 3-neutral, 4-agree, and 5-strongly agree.)

No.	Statements	1	2	3	4	5
1.	The agency has in place a policy and guidelines for setting risk targets (risk appetite and tolerance) considering the various types of risks that modern corporations may be subject to.					
2.	The board of directors sets risk targets (risk appetite and tolerance) with regard to each risk identified at the agency.					
3.	The agency's risk culture is inexorably linked to the organization's culture.					

4.	The organization has identified key risk indicators					
5.	The key risk indicators have been properly assigned and are regularly monitored and reported					
6.	The key performance indicators are regularly monitored and reported					

SECTION E: Mwongozo Code

7) Has your organization implemented ERM in line with the guidelines provided in Mwongozo?

a). Yes

b). No

8) In line with Mwongozo, do you have an audit committee that is in charge of risk management?

a). Yes

b). No

No.	**Mwongozo code**	**1**	**2**	**3**	**4**	**5**
1	The Mwongozo Corporate Governance Code aids in the deterrence of fraud at the agency.					
2	The Mwongozo code has increased the transparency of the agency's operations and decision-making process.					
3	The adoption of the Mwongozo code has increased the agency's accountability, resulting in improved					

	performance.					
4	The adoption of the Mwongozo code has considerably aided the agency's efforts to preserve ethics and principles.					
5	The Mwongozo code has enhanced the reliability and precision of financial and operational data at the agency.					
6	The Mwongozo code guarantees a power balance among the agency's diverse stakeholders.					
7	The Mwongozo code ensures that the agency's rules, regulations, policies, procedures, and contracts are followed to minimize penalties and fines.					
8	The Mwongozo code aids the deterrence of unreasonable exposures of the company by the management.					
9	The Mwongozo code facilitates the identification, monitoring, and management of risks at the agency.					

SECTION F: Fraud Occurrence

9) Rate based on the level of agreement if the following fraud occurs in independent regulatory agencies by ticking (√) in the applicable column. (1-strongly disagree, 2-disagree, 3-neutral, 4-agree, and 5-strongly agree.)

No.	**Fraud occurrence**	**1**	**2**	**3**	**4**	**5**
Misstatement of financial reports						
1	Missing of disclosure					
2	Inappropriate revaluation amount of fixed assets					

3	Overstating revenue					
4	Overstating expenses					
5	Concealed liabilities					
6	Timing difference by not observing the cut-off period					
Asset misappropriation						
1	Cash and inventory larceny					
2	Misuse of company assets					
3	Theft of petty cash and cash receipts					
4	Payroll schemes					
5	Fictitious claims for expenses					
6	Cheque tampering					
Corruption						
1	Employees taking bribes in exchange for providing public services					
2	Purchasing scheme involves favoring a supplier related to an employee who had a financial interest in the purchasing transactions.					
3	Employee assisting to secure a payment involving an inflated invoice.					
4	Employees taking bribes to influence the award of lucrative deals					
5	Misuse of business time					
6	Abuse of power to override controls					

APPENDIX III: List of Independent Regulatory Agencies, 2021

	Regulatory Agency	Enabling legislation	Mandate	Sector
1.	Agricultural, Fisheries and Food Authority	Agriculture, Fisheries and Food Authority Act, No. 13 of 2013	Regulation agriculture sector	Agriculture, Livestock & Fisheries
2.	Capital Markets Authority	Capital Markets Act, Cap 485A	Regulate and supervise the capital markets industry in Kenya	Financial
3.	Central Bank of Kenya	Act of Parliament of March 24, 1966. Article 231 of the constitution	Regulate the banking industry	Financial
4.	Commission for University Education	Universities Act, No. 42 of 2012	The establishment, accreditation, and governance of universities	Education, Science & Technology
5.	Communications Authority of Kenya	Kenya Information and Communications	To license and regulate postal, information,	Information, Communication &

		Act, Cap 411A	and communication services	Technology
6.	Competition Authority	Competition Act, No. 12 of 2010	To promote and safeguard competition in the national economy, and to protect consumers from unfair and misleading market conduct	National Treasury
7.	Council for Legal Education	Legal Education Act, No. 27 of 2012	Regulation and licensing of legal education providers and for connected purposes	Office of The Attorney General & Department Of Justice
8.	Energy & Petroleum Regulatory Authority	Energy Act, Cap 12	Regulate the energy sector	Energy & Petroleum
9.	Insurance Regulatory Authority	The Insurance Act chapter 487	Regulate, supervise and develop the insurance industry in Kenya	Financial
10.	Kenya Bureau of Standard	Standards Act, Cap 496	Promote the standardization	Industrialization &

	(KBS)		of the specification of commodities, and provide for the standardization of commodities and codes of practice	Enterprise Development
11.	Kenya Agricultural & Livestock Research Organization (KALRO)	Kenya Agricultural and Livestock Research Act of 2013	Promote, streamline, co-ordinate and regulate research in crops, livestock, genetic resources, and biotechnology in Kenya	Agriculture, Livestock & Fisheries
12.	Kenya Civil Aviation Authority (KCAA)	Civil Aviation Act, Cap 394	Plan, develop, manage, regulate and operate a safe, economical, and efficient civil aviation system in Kenya	Transport & Infrastructure

13.	Kenya Film Classification Board	Films and Stage Plays Act, Cap 222	Regulating and controlling the making and exhibition of cinematograph films, for the licensing of stage plays, theatres, and cinemas	Sports, Culture & The Arts
14.	Kenya Maritime Authority	State Corporations Act, Cap 446 through Kenya Maritime Authority Order, 2004	Regulate, co-ordinate and oversee maritime affairs	Transport & Infrastructure
15.	Kenya National Accreditation Service	State Corporations Act, Cap 446 through Kenya Accreditation Service Order, 2009	Regulation of accreditation of conformity assessment bodies	Industrialization & Enterprise Development
16.	National Commission for Science, Technology, and Innovations	Science and Technology and Innovation Act, 2013	Regulate and assure quality in the science, technology, and innovation	Education, Science & Technology

			sector and advise the government in related matters	
17.	National Construction Authority	National Construction Authority Act No. 41 of 2011	Regulate and coordinate the construction industry for sustainable social and economic development	Lands Housing & Urban Development
18.	National Environmental Management Authority (NEMA)	Environmental Management and Coordination Act, No. 8 1999	Exercise general supervision and coordination over all matters relating to the environment	Environment, Water & Natural Resources
19.	National Transport & Safety Authority	National Transport and Safety Authority Act, 2012	Regulate Road and Rail transport system	Transport & Infrastructure
20.	Public Procurement Regulatory Authority	Public Procurement and Disposal Act, No. 3 of 2005	Ensure procurement procedures are complied with as established under the	National Treasury

			Public Procurement and Disposal Act, 2005, and Regulations, 2006.	
21.	Retirement Benefits Authority	Retirement Benefits Act, Chapter 197	Regulate and supervise the establishment and management of retirement Benefits schemes	Financial Services
22.	Sacco Societies Regulatory Authority	Sacco Societies Act (Cap 490B	License Sacco Societies to undertake deposit-taking Sacco business in Kenya (popularly known as Front Office Service Activity or FOSA), and to supervise and regulate such Sacco Societies in Kenya	Financial Services

23.	Technical and Vocational Education and Training Authority	Technical And Vocational Education And Training Act, No. 29 of 2013	Governance and management of institutions offering technical and vocational education and training; to provide for coordinated assessment, examination, and certification	Education, Science & Technology
24.	Tourism Regulatory Authority	Tourism Act 2011	Formulate guidelines and prescribe measures for sustainable tourism throughout the country. Regulate tourism activities and services countrywide, in accordance with the national	East African Affairs, Commerce & Tourism

			tourism strategy. Register, license and grade all sustainable tourism and tourist-related activities and services including cottages and private residences engaged in guesthouse services.	
25.	Water Services Regulatory Board	Water Act, Cap 372	Promotion and regulation of water provision services	Environment, Water & Natural Resources

Source: PTPR, 2013

APPENDIX IV: Approval from Strathmore University Ethics Review Board

Strathmore
UNIVERSITY

4th April 2022

Mr Munika Michael,
kibukosya02@gmail.com

Dear Mr Munika,

RE: Effect Of Enterprise Risk Management On Fraud Occurrence In Independent Regulatory Agencies

This is to inform you that SU-IERC has reviewed and **approved** your above **SU masters'** research proposal. Your application reference number is **SU-IERC1307/22.** The approval period is **4th April 2022 to 3rd April 2023.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-IERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-IERC within 48 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-IERC within 48 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to SU-IERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

for: **Dr Ben Ngoye,**
Secretary; SU-IERC

Cc: Prof Fred Were,
Chairperson; SU-IERC

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APPENDIX V: Approval from National Commission Science, Technology & Innovation

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **291337**

Date of Issue: **10/November/2021**

RESEARCH LICENSE

This is to Certify that Mr.. Michael Munika KIbukosya of Strathmore University, has been licensed to conduct research in Nairobi on the topic: EFFECT OF ENTERPRISE RISK MANAGEMENT ON FRAUD OCCURRENCE IN INDEPENDENT REGULATORY AGENCIES IN KENYA for the period ending : 10/November/2022.

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